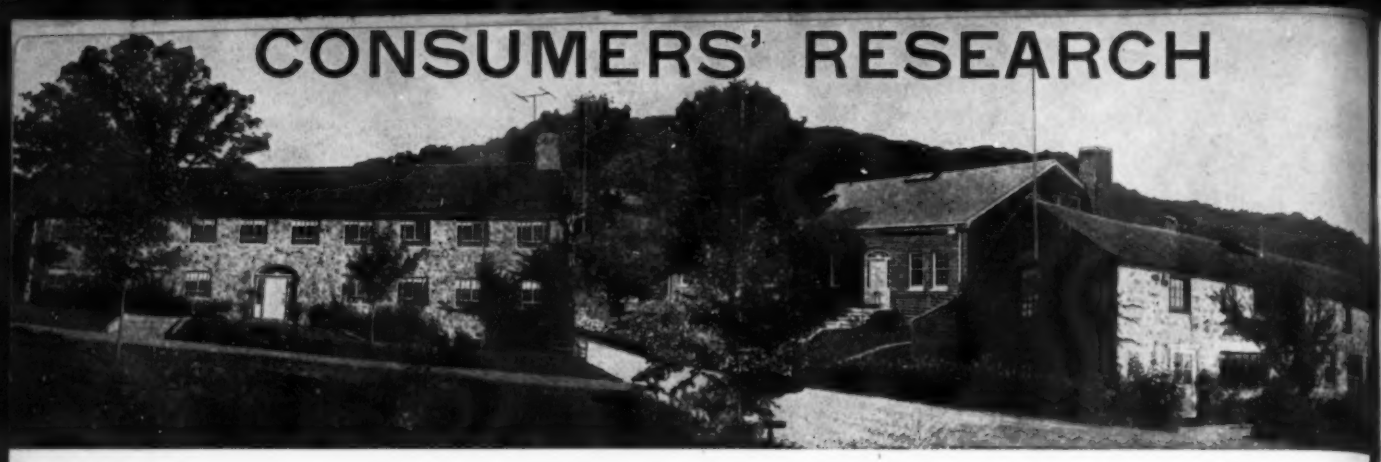
January 1944

CONSUMERS' RESEARCH

Bulletin

CONTENTS



Vol. 13 • No. 1 **BULLETIN** January 1944

Off the Editor's Chest

IN any country where governmental controls over business and the consumer become strong a tendency soon develops toward the setting up of cartels (sometimes spelled kartels or kartells), which are like the trusts of the early years of the 20th Century with the added feature that the government sits in on the racket of fixing prices and "dividing up the market," or of "dumping" products abroad at prices far cheaper than selling prices to the home-country consumers. Where cartels are legalized, the government undertakes also to enforce price-fixing and other agreements existing between firms that have contracted not to undersell each other.

The first large-scale development of cartels occurred in Germany during the First World War, and provided convenient means by which government could manage and control industry while still leaving the *details* to those who were nominally in positions of ownership and management. Through these controls, the German government was able to channel the supply of munitions of war and hold the various manufacturing firms in line by the usual wartime restrictions imposed on utilization of labor and of various important types of materials.

Cartels have been looked upon favorably in continental Europe for at least 50 or 60 years, and they have been gladly tolerated by the big-business interests themselves because *for those who are allowed in on the ground floor of the system*, they provide a very comfortable assurance of steady income and stable profits—a sort of "social security" for big business. The firms that are "regular" and behave properly from the government's standpoint, get a continuous stream of orders at favorable prices (well above free-market prices), receive the allotted amounts of labor, raw material, and supplies, and various free services from governmental research and similar agencies.

The British have long been hospitable to the "combine," or cartel idea, for they have never had the American free-market attitude, with its emphasis upon free and fair competition between independent business units equal before the law. As a result, before the beginning of the Second World War, trusts or combines had displaced competitive enterprise throughout the greater part of the industrial production and marketing of the United Kingdom.

A left-wing member of the British cabinet has recently expressed the hope that an internationally-valid scale of wages would be established in order to *prevent competition by "backward countries"*—not realizing, apparently, that whether a country is backward is a matter that might conceivably be better left to the judgment of the people who live in it, or should at least not be determined by those who would happen at any moment to be operating an international system of cartels from central headquarters in a dominant trading country. Among liberals, the cartel system is rationalized as a "more collectivized way of life," and cartels or government trusts, *in total disregard of their effect on consumers*, are viewed as superior to the system of free competition and trade which for a hundred and fifty

(*Continued on page 24*)

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Symbols used to indicate sources of data and bases of ratings: A—recommended on basis of quality; AA—regarded as worthy of highest recommendation; B—intermediate with respect to quality; C—not recommended on basis of quality; cr—information from Consumers' Research's own tests or investigations; 1, 2, 3—relative prices, 1 being low, 3 high. Note that price and quality are completely differentiated in CR's listings; **a quality judgment is independent of price**; 42, 43—year in which test was made or information obtained or organized by the staff of Consumers' Research.

It will be advantageous if you will, whenever possible, send prompt notice of change of address at least a month before it is to take effect, accompanying your notice with statement of your old address with name in full. At least three weeks' notice must be given in any case. This rule, however, regarding long advance notice does not apply to military personnel. *Changes of address for men and women in the services will gladly be handled whenever and as often as required.*

CONSUMERS' RESEARCH BULLETIN, issued monthly by Consumers' Research, Inc. Editorial and Publication Offices, Washington, N.J. Single copy 30c. Subscription price (12 issues) $3 per year, U.S.A.; Canada and foreign, $3.50. For libraries, schools, and colleges, a special subscription of nine monthly BULLETINS (October-June, inclusive) is available at $2; Canada and foreign, $2.50. ¶Responsibility for all specific statements of fact or opinion at any time made by Consumers' Research lies wholly with the technical director and staff of the organization. Entered as second-class matter November 9, 1934, at the Post Office at Washington, N.J., under the Act of March 3, 1879; additional entry at Easton, Pa. ★★ Printed in U.S.A. ★★ CONSUMERS' RESEARCH BULLETIN is on file in many school, college, and public libraries and is indexed in Industrial Arts Index and in the Readers' Guide to Periodical Literature.

The Consumers' Observation Post

WHAT FOLKS ON THE HOME FRONT NEED or want very much right now, according to an extensive poll of public opinion, are automobile tires and tubes, silk or nylon stockings, mechanical refrigerators, automobiles, and washing machines. Next come shoes, stoves, elastic articles such as garters, girdles, or suspenders, and radio sets. According to another survey, men want first of all a new car, while women want an electric refrigerator. If the Office of Civilian Requirements can resolve the conflict of the various interests blocking resumption of production of necessary civilian articles, it seems plain that one sound step to ward off inflation can be taken by permitting some of these and other much needed, much desired items to be made again.

* * *

DYNE, A NEW SUBSTITUTE FOR BUTTER, was placed on the market experimentally some months ago. It was made from butterfat and dried milk solids, and was reinforced with vitamins A and B. There was not sufficient fat in it to permit its use for frying. Whether there was any real need for such a substitute continues to be a debated question. One food journal reported in November that in the Pacific Northwest there were such huge quantities of butter in storage that producers were hard put to it to find storage space for frozen food products. The OPA, however, is reported to have decided that Dyne contained too much butterfat and must be rationed too.

* * *

STREET DRESSES SELLING FOR LESS THAN $5 and cotton house dresses for less than $1.60 are difficult to find. The reason for their scarcity is simple. The manufacturers just aren't making them any more. Not long ago it was reported that only six manufacturers were making cotton dresses retailing below $1.60, whereas there were 43 turning them out a little over a year ago. It appears that the failure to produce the lower-priced garments is due to higher labor costs, scarcity of rayon yarn, and adequate demand for all the higher-priced garments that can be turned out from the limited supplies of material and labor. The clothing trade sees little hope for appearance of any considerable number of low-priced garments in retail shops unless price ceilings are raised at wholesale levels or the government subsidizes the manufacturer for his higher costs of labor and materials. A subsidy, of course, is only a way of making an article seem cheaper, till the tax bill comes in.

* * *

THAT VITAMINS ARE LOST IN COOKING VEGETABLES has long been appreciated by the informed housewife. Not so well known, however, is the fact that it makes a difference in what type of pan the vegetables are cooked. Researchers E. Josephine Brown and Faith Fenton made an interesting study of the variation of the vitamin C content of parsnips cooked in different utensils which indicated that there was less destruction of vitamin C when the parsnips were cooked in enamel (16 percent less) or Pyrex (19 percent less) than in stainless steel, which gave a loss of 34 percent, or aluminum, with a loss of 29 percent. Best of all were the pressure saucepans which showed a loss of only 9 to 10 percent of vitamin C in cooking the parsnips. Lowest loss of the vitamin occurred when the vegetable was cooked whole and not cut up, but the improvement so gained was small.

* * *

HOME CANNERS who have begun to save empty glass coffee jars for the coming season may perhaps be carrying thrift too far for safety. The California In-

dustrial Accident Commission has warned against their use under some circumstances. In order to save weight and material, the Commission points out, some of these jars, which are square in shape, are made very thin. As many housewives have discovered to their sorrow, these jars when processed by the cold pack, oven method, are likely to explode. Furthermore, because of the weakness due to the shape and the thin walls, there is danger that in removing a tight screw cap or ring the jar may be crushed in the hand, with unfortunate results. If such jars must be used, the Commission advises leaving the jars in the oven to cool somewhat before they are removed, and always holding the jar with a towel when wrestling with a stubborn lid.

* * *

GYPS TO WATCH OUT FOR: Repair racketeers who often operate from door to door, collecting electric and other appliances for repair or servicing, charging excessive prices and frequently ruining irreplaceable appliances. ... Birth certificate suppliers who accept fees and valuable personal records and then depart without rendering any service whatever, and never return the personal papers. As a rule birth certificates may be obtained for a nominal charge from the Bureau of Vital Statistics at the capital of the state in which you were born.

* * *

COTTON CLOTH, including items made therefrom, such as sheets and towels, is likely to be scarce during the coming year unless demand slackens or supplies increase. It appears that our huge reserve stocks are shrinking fast. Lend-lease and rehabilitation take a lot of textiles, and the Army on active fighting fronts wears out clothes more than twice as fast as in training camps. Fabric production is falling off, partly because workers can obtain higher wages in war plants and, according to one analysis, because women workers find their pay envelopes after tax deductions unattractive or because a period of experience in industry has taught them that wartime housekeeping is a full-time job.

* * *

AT A TIME WHEN U.S. OFFICIALS were suggesting that the production of meat, dairy products, and poultry must be cut sharply in order to avoid the drain upon scarce supplies of protein feeds, the Australian food marketing chief has announced that Australia must increase the production of meat and dairy products at the expense of wheat and wool. In order to make the production of meat, dairy products, and vegetables profitable and attractive to Australian farmers, the necessary arrangements were to be made to provide priorities on manpower, fertilizer, and agricultural machinery.

* * *

MORE SHOES FOR CHILDREN are considered necessary if their feet are not to be crippled permanently, according to the president of a state society of chiropodists. It appears that at some stages a child may outgrow a pair of shoes in three weeks and he will need of course far more shoes than the present ration allotment of two pairs a year.

* * *

THE QUALITY OF SOAP has been reduced by order of the War Food Administration, it appears, with the object of "increasing the U.S. soap supply" by something like 9 percent. More rosin and builders will be used. The resulting product will probably not lather quite so well and will be harder on the hands than the same brand of pre-war composition. A University of California professor of chemistry suggests that one sensible way to stretch the soap supply is use water softener, wherever the water is hard, which saves the consumer both soap and money.

* * *

LEATHER, RUBBER, OR SYNTHETIC SOLES FOR SHOES are now required by the War Production Board to conform to certain minimum quality standards. The yardstick for performance is that of a "six-iron center belly sole" with respect to abrasion, stitch tearing, reaction to water, and other factors. The new regulation is aimed at the producers of shoes made from synthetic or non-critical materials which did not come under the previous rationing order. Competition of such shoes, particularly the two-color brown-and-white combinations made with synthetic soles, was getting to be too keen for the manufacturers who had been forbidden to make the two-color combinations using leather--and the WPB was apparently glad to come to their rescue.

(The continuation of this section is on page 29)

Hand Soaps and Protective Creams

WITH THE INCREASE in the number of workers, many of them women, unaccustomed to factory conditions and to the production line, there is greater than normal demand for soaps that will effectively remove from the hands the grime, oil and grease resulting from industrial operations, and at the same time not harm the skin any more than necessary. It is important that the cleansing be thorough, but the action of the cleanser should not be harsh, since any metal or other particles which may have become imbedded in the skin or flesh, or any greasy, oily, or other residue from materials which have been handled during working hours, can be the cause of severe skin irritation.

Such a condition may result from actual poisoning, from scratches or abrasion, or from allergy. The long continued extraction of the natural oils from the skin by daily or frequent use of harsh soaps not only leaves the hands in a disagreeably rough and dry condition, but deprives them of the protection against bacterial invasion afforded by natural oils in the skin; they are thus more susceptible to infection. Workers whose jobs entail the handling of chemicals will often require a special type of cleansing agent or a special method of cleansing or both, or perhaps a special protective cream, or gloves. (Where the use of rubber gloves is standard practice, the use of a cream should not be considered a safe substitute.)

The special soaps and protective creams for workers in certain industries are available to factory managements for the use of employees, but few if any are sold in stores at retail. The general-purpose soaps and creams which are widely sold at retail in small packages are useful where oil, grime, grease and oil-base paints and inks are employed; these creams are not effective for protection against aqueous solutions nor many of the industrial solvents.

Mechanics' soaps are available on the general market in cake, powder, liquid and paste form. Some depend for their effectiveness upon an abrasive material which helps the soap they contain to scrub the dirt from the skin, while others depend solely upon the detergency or soap-like action of their ingredients.

The abrasives used in the first kind vary from finely divided pumice to actual sand; the coarser the abrasive, in general, the more rapidly it removes the dirt. The mechanical effectiveness of the soap, however, is by no means the only or the chief criterion by which it should be judged. Because the abrasive soaps roughen the hands, making the dirt harder to remove each time, the tendency is to use progressively harsher soaps in cleaning up. While the use of a soap containing a coarse abrasive may do no particular harm to an occasional user, its use daily, or several times a day, as by a factory worker, will often, in the course of time, produce a disabling dermatitis.

Corn meal in mechanic's soap, in place of a mineral abrasive, provides some mechanical friction which helps loosen the dirt, and also assists by absorbing some of the dirt; at the same time it does not cause so much roughening of the skin. Perhaps the best of all methods of cleaning the hands is to use warm water and an oil soap, adding corn meal after having worked up a lather. Continued use of a "strong" soap (soap with free alkali) can also produce dermatitis. Some of the newer soaps are kept nearly neutral chemically, and some use one of the sulphonated oils in place of the older alkaline constituents of soap.

Protective creams, which are coming into wide use, are intended to cover hands with a protective film or coating and thus eliminate the need for harsh gritty hand soaps, kerosene, turpentine, or other solvents in cleaning grimy hands. The use of a protective cream suitable to the work not only speeds up the washing, but leaves the skin in a more nearly natural state. These creams are made of oils, waxes or fats; some contain a finely divided substance such as talc to give them "body." Protective cream is rubbed well into the hands and under the nails before starting work; the "invisible glove" so provided protects the hands for three or four hours, so that dirt is prevented from becoming imbedded in the skin; later the dirt is removed with the protective cream simply by washing; some creams wash off in water alone while others require the use of an ordinary toilet soap with water.

The hands should be well cleansed with a good neutral soap (not "strong"), rinsed thoroughly with clean water and dried on a clean towel before leaving the washroom.

This takes more time than many wish to spend on washing, but it is time well spent. The practice of removing merely the worst of the dirt and waiting until arrival at home for the real cleaning up is worse than going home without washing at all. The soap will have loosened the dirt and to some extent permitted it to penetrate the skin; the dirt left on the hands thus has a better chance than ever of infecting or irritating the hands before the final washing takes place, and because the rinsing will usually have been superficial as well, some soap remains in the skin to add to the irritating effect. If a protective cream is used, the hands should be washed, dried and a new coating of cream applied every three or four hours while at work.

Some creams are made with a lanolin base on the theory that lanolin penetrates the skin to some extent and will therefore bring out all the dirt with it when it is removed. Others have a base which does not penetrate the skin, on the theory that an impervious coating is formed which completely prevents dirt from reaching the skin at all. All of these creams are classified as cosmetics, and are therefore subject to the 10 percent luxury tax, which sounds as though somebody, or perhaps quite a few persons, in the government services have allowed their tax-collecting objectives to get in the way of the government's intention not to discourage work in war production plants by needless extra costs or disadvantage to the individual. The legal experts who "define" cosmetics for tax purposes may wish to give a little thought to a new definition, more in line with the physical realities of the problem.

Hand Soaps

These mechanics' soaps, with two exceptions, have been given practical tests and all but two of those given these tests were found effective in removing grime, oil, grease, paint, and ink, except as otherwise noted. Figures in brackets [ ] are the calculated prices per pound and are included for comparison purposes.

A. Recommended

Mobo Automobile Soap (John T. Stanley Co., Inc., W. 30th St. & North River, New York City) 1-lb. size, 45c; 5-lb. size, $1.65, at auto supply stores. [33c & 45c] A jelly-like potassium-linseed-oil soap containing a small percentage of coconut oil. Worked much more slowly than do the sand soaps, but with equal effectiveness, and left the hands in excellent condition. Some may object to the odor. This soap and *Murphy's Oil Soap* are considered the best soaps for mechanics' use among the kinds studied by CR. **3**

Murphy's Oil Soap (Murphy-Phoenix Co., Cleveland, Ohio) 9-oz. can, 20c at Woolworth and Kress stores. [35.5c] A jelly-like potassium-corn-oil soap. **3**

* * *

Bio-Seal Hygienic Hand Cleanser (Green & Green, 12 Waverly Pl., N.Y.C.) Sold only in large size containers, for industrial plant use. A soap powder containing corn meal. The corn meal made it feel about as gritty as a sand soap, which may make it more acceptable to mechanics who think that only an abrasive will remove the dirt. Did an excellent job of cleansing, but more slowly than the sand soaps. Left the hands soft and smooth.

B. Intermediate

Misco (Millers Soap Co., Reading, Pa.) 25c for 2½ lb. [10c] A soap paste containing sawdust. Effective, but rather drying to the hands. Considered not quite as good as *Flash DeLuxe* or *Colgate's*, but its lower price is an advantage. **1**

Tops (Tops Mfg. Co., Bogota, N.J.) 15c for 4 lb. [3.8c] A soap paste containing a mineral abrasive. Abrasive seemed finer, and the soap was generally less irritating in use than *Gre-Solvent*, *Mione*, or *White Sail*. **1**

Boraxo (Pacific Coast Borax Co., Los Angeles and N. Y. C.) Two 8-oz. boxes for 25c at A. & P. stores. [25c] A borax soap powder, containing 3 parts powdered borax and 1 part powdered sodium-tallow soap. Did not remove paint from the hands satisfactorily. Dried the hands to some extent, but believed not particularly objectionable except for use on an exceptionally sensitive skin. **2**

Colgate's Mechanics' Soap Paste (Colgate-Palmolive-Peet Co., Jersey City, N. J.) 15c for 10¾ oz. [22.3c] Contained an exceptionally fine mineral abrasive, probably pumice. Effective, but worked more slowly than do the coarser materials. This, and *Flash DeLuxe*, considered the best of the soaps in the group studied that contained mineral abrasives. **2**

Flash DeLuxe (Flash Chemical Co., Cambridge, Mass.) 1-lb. can, 50c at hardware stores. [50c] A soap powder containing benzoin, lanolin and fine pumice. Cleansed rapidly and it did not roughen the hands as badly as did the sand soaps; left the hands surprisingly smooth, considering its abrasive quality. Somewhat smoother than *Lava* soap. **3**

C. Not Recommended

Gre-Solvent (The Utility Co., Inc., 636 W. 44th St., N. Y. C.) 1-lb. can lists at 15c, but purchased for 11c at A. & P. store; 3-lb. can for 29c at some hardware stores. [9.7c to 15c] A soap paste containing a coarse abrasive (ground dolomitic limestone). Effective, but hard on the hands. **1**

Mione (Mione Mfg. Co., Collingdale, Pa.) Paste. 10c for 1-lb. can; 3-lb. can, 25c at Woolworth and Kress stores. [8.3c to 10c] Contained 6% sodium stearate, 2% sodium carbonate, 5% sand, 47% dolomitic limestone, 40% water. **1**

White Sail (The Great Atlantic and Pacific Tea Co.) 3-lb. can, 20c. [6.7c] Paste. Contained about 6% sodium-tallow soap, 2% soda ash, a very small quantity of trisodium phosphate and over 50% dolomitic carbonate abrasive. Effective, but hard on the hands. **1**

Dif (Dif Corp., Garwood, N. J.) 15c for 10 oz. [24c] A soap powder containing a fairly fine but sharp abrasive, similar to sand. Cleansed

effectively, but left the hands feeling dry. 2

Lava Soap (Proctor & Gamble) Medium-size cakes approximately 4 oz. each at three for 17c at A. & P. stores. [22.7c] Satisfactory for grime and most paints, but not for imbedded oil and grease. Contained an abrasive, but was not very harsh, although it left the hands feeling rather dry. 2

* * *

The following additional listings are based on chemical analysis only.

Git Hand Soap (Crystal Chemical Co., Newark, N. J.) 13c for 8-oz. can. [26c] A soap powder which consisted chiefly of sodium stearate and sodium coconut oil soaps, trisodium phosphate, ground rice and soda ash, with nearly 50% of sand. 1

Magnus Hand Cleaner (Magnus Chemical Co., Garwood, N. J.) 25c for 10 oz. [40c] A soap powder which consisted of sodium-stearate soap, trisodium phosphate, and about 50% white sand. (Label claimed it did *not* contain sand.) 3

Protective Creams

All the protective creams tested, with the exceptions noted, gave substantially equal protection against grime, grease, oil, paint, and ink. All were readily removable with soap and water; those intended to be removable with water alone are indicated. Figures in brackets [ ] are the calculated prices per pound and are included for comparison purposes. These and the prices named do not include the "luxury" tax of 10% on selling price which was charged on most of the purchases.

A. Recommended

Mobo Hand Shield (John T. Stanley Co., Inc., W. 30 St. & North River, N. Y. C.) Sold in dozen lots only; $2.43 for a dozen 8-oz. jars or $4.18 for a dozen 16-oz. jars; price includes postage within 50 miles. [34c to 39c] Lanolin base plus a film-forming agent claimed to keep the dirt out of the skin entirely. Slightly alkaline. Left the hands smooth and soft. 1

Practi-Kreme (Prack Laboratories, Inc., 132 W. 21st St., N. Y. 11, N. Y.) Obtainable direct from the manufacturer; 1-lb. jar, 50c including postage. [50c] Had a fat base, not specifically named. Removable with water alone. Manufacturer recommends use on all parts of the body where protection is needed. Left hands soft and smooth. 1

Prack Waterproof, Formula 33 (Prack Laboratories, Inc.) Obtainable direct from the manufacturer; 1-lb. jar, $1 postpaid. [$1] A special cream for protection against aqueous (watery) solutions, but not a full substitute for rubber gloves. The hands are somewhat greasy while the cream remains on them. Requires the use of hot water and soap (or *Practi-Kreme*) for removal. Left the hands smooth and soft. Was found water-proof, but was not tested with corrosive solutions; rating is therefore to be considered provisional. 2

Breck pH7 Protective Cream (John H. Breck, Inc., Springfield, Mass.) 7½ oz. jar, 75c at Liggett Drug Stores. [$1.60] An exceptionally expensive protective cream. Vanishing cream base containing lanolin, methyl cellulose, and bentonite. Left the hands feeling smooth and soft. This cream produced less sensation of having something on the hands than did any other tested. 3

* * *

Pan-Nay Skin Protector (Green & Green, 12 Waverly Pl., N. Y. C.) Sold only in large size containers, for industrial plant use. Tallow base, on the theory that because tallow does not penetrate the skin, it would help keep the natural oils in the skin and prevent entry of dirt. Claimed to protect against spatters of most ordinary chemicals except anilin and barium dyes. Manufacturer recommends use on face to protect against spatters. Left the hands smooth and soft.

B. Intermediate

Creamy Glove (Lehn & Fink Products Corp., Bloomfield, N. J.) 49c for 8-oz. jar. [98c] Protected against dirt, grease, paint, etc. Considered somewhat drying to the hands. 2

Hand-Saver (Vanguard Sales Corp., 125 W. 45th St., N. Y. C.) 79c at Liggett Drug Stores for 16 fl. oz. jar. [73c] Base not stated. Felt like soft soap, making the skin feel "tight" while it is on the hands. Did not dry in fully; not a disadvantage in machine shop, but would be in office work. Removable with water alone. Left hands feeling somewhat dry, but not as bad in this respect as *Protek*. 2

Hantek Protective Cream (Drake Laboratories, Philadelphia) 49c for 13 fl. oz. [58c] Remarks concerning *Hand-Saver* apply to this cream. 2

Protek (E. I. du Pont de Nemours & Co., Wilmington, Del.) 8 fl. oz. jar, 33c at Macy's. [61c] Also available in most hardware stores. Thought to give rather better protection against kerosene than other creams. Left the hands feeling rather disagreeably dry. The opinion has been expressed by some women who have used it that its use may harm the hands more, in the long run, than use of a soap paste containing an abrasive. 2

* * *

The following protective creams would be effective for household use but did not give good protection against paint, or, in some cases, grime, grease, oil, or some other kinds of soil.

Liquid Glove (The Benjamin Ansehl Co., St. Louis & N. Y. C.) 25c for 6-oz. bottle. [67c] Apparently an oil emulsion. Protected against ordinary household dirt, typewriter ribbon, black shoe paste, etc. Practically ineffective against paint. Left the hands feeling soft and smooth. Considered of little value to a mechanic, but the label did not claim effectiveness for shop work. 2

Mitts (Mitts Mfg. Co., Brooklyn, N. Y.) 25c for 8 fl. oz. jar. [59c] Protects against dirt and grease, but not fully against a silver-cleaning job; mediocre protection against paint. An attempt to rub more of the cream into the skin, in trying to secure better protection, resulted in the hands remaining sticky. Felt unpleasant on the hands—believed to contain a soft soap—and left the hands unpleasantly dry after use. 2

Apple Blossom Colloidal Hand-Guard (Helena Rubenstein, Inc., 715 Fifth Ave., N. Y. C.) 50c for a collapsible tube containing 3¼ oz. [$2.46] Per-pound cost extremely high. Not satisfactory for deeply imbedded grease, nor for paint, though label claimed "excellent for use in factory." Did not protect satisfactorily in a

job of cleaning household silver. Protects against moderate dirt and typewriter-ribbon ink. Left hands feeling smooth. Girls doing office work may like this cream, as it will do a fair job for them, and there is little feeling of something being on the hands. 3

Hand-i-Septic (L. R. Kallman & Co., Chicago) 50c for 6 fl. oz. [$1.24] Apparently a glycerine-base liquid. While it was on the hands, they felt unpleasantly rough, as though a cold-water paint had dried on them. After removal, the hands felt unpleasantly dry. Protected against dirt and grease, but not fully against paint. Would rate *B* on the basis of protection alone, but considering the drying-out effect, might warrant a less favorable rating. 3

Battery Hydrometers

THE NEED for increased care of automobile storage batteries has been emphasized by the Office of Price Administration in its recent permission given to battery manufacturers to reduce their guaranty periods. This is a recognition of the fact that present conditions of slow driving and low mileage use of cars tend to shorten battery life. Not only is the life of batteries considerably decreased by the present light and intermittent service to which they are subjected, but there is serious danger from freezing even at moderate winter temperatures well above zero, whenever the specific gravity of the liquid in the cells drops below a certain level. This was discussed in CR's November 1943 BULLETIN where it was also pointed out that a battery which is left undercharged will deteriorate rapidly whether it is used or left standing unused. With these conditions in mind, it is clear that the consumer who is not making almost normal use of his car should check the specific gravity of the electrolyte in the cells of his battery regularly, perhaps once a week, with an accurate battery hydrometer, and see to having it recharged at a service station whenever the specific gravity reading falls to or below about 1.210, corresponding to the about "half-discharged" condition. For convenience of reading hydrometer markings omit the decimal points, i.e., 1210 is given, instead of the correct form 1.210. Charging should preferably be done by the standard method rather than the rapid-charging methods now widely advertised, for laboratory tests have shown that charging by the rapid method is rather hard on batteries and tends to shorten their life.

Most motorists forget all about their battery until some cold morning when it simply lies down on the job and fails to crank the engine, or doesn't crank it fast enough to give a start. *When this stage is reached, the battery has usually been damaged beyond repair and requires replacement*, unless it was run down by some accidental occurrence through omission to turn off ignition key, lights, or radio, and has stood in the run-down condition for only a brief period. While a battery can be checked at a service station, it is inconvenient to have this done as often as is desirable, and thus most consumers would probably be wise to purchase a suitable hydrometer for use at home. Hydrometers, which used to be very easy to get, are no longer plentiful, but some are available and can be found with a little shopping. The float alone, which is all that is really needed if there is an anti-freeze tester glass syringe already available, is relatively easy to buy. However, if the same syringe is used with both floats, it is important that it should be washed out thoroughly after use to avoid contaminating the radiator liquid with battery electrolyte, or the battery electrolyte with the harmfully contaminating metallic salts carried by the water in the radiator.

Battery hydrometers are usually made so that they read the correct gravity when the temperature of the electrolyte (the liquid in the battery, not the temperature of the air) is at 80°F. The battery electrolyte may vary over a fairly wide range, depending upon the

Temperature of Electrolyte	*Correction*
10°F	—28
20°	—24
30°	—20
40°	—16
50°	—12
60°	—8
70°	—4
80°	0
90°	+4
100°	+8
110°	+12
120°	+16
130°	+20
140°	+24
150°	+28
160°	+32

weather, the distance which the car has recently run, and the state of charge before the trip. When the temperature is above or below 80°F, a correction to the hydrometer reading, given in the accompanying table, must be applied to obtain the true value. For example, if the hydrometer float reads 1300, and temperature of the liquid is at 30°F, the correction is minus 20, giving by subtraction a correct reading of 1280. (A plus correction, of course, means that the correction is added.)

Some hydrometers have a thermometer built in, and associated with this thermometer is a scale of corrections from which the correction to be added or subtracted can be read directly without reference to a table. This is not as commonly supplied on commercial hydrometers as its convenience and greater accuracy warrants. The self-contained thermometer obviates the necessity for a separate thermometer (which few will trouble to use) to measure the temperature of the electrolyte, and it is obvious, of course, that unless this temperature is measured, one may fail to take account of a fairly sizable correction in trying to arrive at the actual specific gravity of the liquid.

The following ratings are based on tests made at three specific gravities, 1.150, 1.215, and 1.280, corresponding to a "dead," about half-charged, and a fully-charged battery. The ratings are based chiefly upon accuracy, but due weight was also given to legibility of scales, etc., which is an important factor, considering that battery hydrometer readings must often be taken under difficult conditions, in poor light, etc. (Some of the hydrometers tested were difficult to read correctly even under excellent lighting conditions in CR's laboratory.) Hydrometers are commonly very poorly identified and marked by the manufacturers. A given dealer or chain may handle different makes at different times, particularly under present scarcity conditions.

A. Recommended

Exide, Type S-I-B (The Electric Storage Battery Co., Philadelphia) $1.40. 1¾-inch, legible, easily-read scale. Graduations range from 1140 to 1300 x 10. Also marked *Full*, *Half*, and *Unsafe*, with "danger zone" marked in red, a very convenient feature since hydrometers are often used in conditions where reading of the scale or of printing on it is difficult. Had automatic device for breaking the suction so that the electrolyte would be brought to correct level for reading (also a good feature).

Sears, Cat. No. 28—7141 (Sears, Roebuck & Co.) 45c plus postage. 1¾-inch, legible, easily-read float. Graduations range from 1090 to 1310 x 5. Marked *Full*, *Half*, and *Empty* on green, yellow, and red backgrounds, respectively. Float weighted with lead shot corked with cotton wool.

Wards, Cat. No. 61—3865 (Montgomery Ward & Co.) 69c plus postage. Very similar (but not identical) to float used in *Sears*, Cat. No. 28—7141. The name *Ward* appeared on float scale. Float weighted with lead shot corked with cotton wool.

B. Intermediate

Wards, Cat. No. 61—3866 (Montgomery Ward & Co.) 95c plus postage. 1-7/16-inch, legible, easily-read scale. Graduations range from 1100 to 1300 x 5. Accurate, but lacked markings or color bands indicating state of charge, making it unsuitable in CR's opinion for general consumer use. Had built-in thermometer for temperature correction, judged sufficiently accurate for the purpose. This hydrometer was of exceptionally good design (except for its float), and if the float is replaced by the 10c float from a Wards' retail store listed under *Hydrometer Floats*, it would merit an *A* rating.

C. Not Recommended

Junior Hydrometer No. 75 (manufacturer unknown) 50c (printed on box). Hydrometer of smaller than standard size. This instrument was practically unusable, for the float stuck to the side wall of the float chamber, making it impossible to obtain even reasonably approximate readings.

Master (Western Auto Supply Stores) $1.25 (printed on box), but sold for 26c. Markings from 1100 to 1300; marked *Full Charge*, *Half Charge*, and *Dead Battery* on yellow, blue, and red bands, respectively. Float action unreliable.

Hydrometer Floats

The *A-Recommended* float can be purchased to replace unsatisfactory or damaged floats in any make of hydrometer syringe having a normal-sized float chamber, designed for testing either battery or anti-freeze solution, but note the text regarding precautions to wash carefully after use.

A. Recommended

Wards (Montgomery Ward & Co. Retail Stores) 10c. 1¾-inch, legible, easily-read scale. Graduations range from 1090 to 1310. Marked *Full*, *Half*, and *Empty* on green, yellow, and red color bands. Float weighted with lead shot corked with cotton wool, and same as that used in *Sears* 28—7141.

B. Intermediate

Penn Jersey Stores, Inc. 12c. 1-7/16-inch scale. Markings (without uniform scale of small divisions present in other floats except *Pep Boys*, *Master*, and *Junior No. 75*) from 1100 to 1280; marked *Full Charge*, *Half Charge*, *Dead Battery* on yellow, blue, and red color bands.

C. Not Recommended

Pep Boys Auto Stores. 9c. 1-7/16-inch scale. Markings from 1100 to 1300; marked *Full Charge*, *Half Charge*, and *Dead Battery* on yellow, blue, and red color bands. Inaccurate.

Process Cheese

THE FIRST PATENT for making process cheese was issued to J. L. Kraft in 1916. In brief, it was essentially a method for heating cheese and running it off into hermetically sealed containers without the loss of the cheese characteristics. Several other patents covered various other processes such as grinding cheese, heating it and adding water and coconut oil for the purpose of enabling the product to withstand hot weather, adding sodium phosphate to "improve the texture," and blending whey solids with cured Cheddar cheese. At one time most of the process cheese patents were held by the Kraft-Phenix Corporation, a subsidiary of the National Dairy Products Corporation. During the last few years, however, many of the more important patents have expired and hence the process may be generally used by the industry.

Process cheese has achieved considerable vogue, apparently for several reasons. It is uniform in flavor and mild. Its composition is such that it keeps at room temperature, and it does not need to be refrigerated. A further advantage from the convenience standpoint is that it is always of the proper shape and consistency for sandwiches and that there is no loss due to rind.

The true cheese connoisseur turns up his nose at process cheese because of its lack of distinctive flavor characteristics. Men as a rule prefer a cheese with the pronounced flavor that accompanies advanced ripening. Women, on the other hand, who do most of the family marketing, like the faint or mild flavor of process cheese.

In wartime, there is probably considerable justification for making this type of cheese, for it uses up rinds, rejected cheese, cheese which is sub-standard, "off-color," moldy, or otherwise likely to be rejected for direct sale to consumer. In Wisconsin, for example, there are five recognized state grades for Swiss cheese. The fifth grade known as "grinders" is almost exclusively used for making process Swiss cheese or "cheese food" compounds. The Wisconsin State Department of Agriculture has estimated that approximately 20% of Wisconsin Swiss cheese falls in the "grinders" class. Everything below "grinders" is "undergrade." "Undergrade" cheese (representing less than one-half of one percent of the Wisconsin cheese) is usually damaged or greatly off-flavor and may be used for process Swiss when the damaged part is cut out.

As a rule green cheese which has not had time to develop a characteristic cheese flavor is used, with just enough well-aged cheese to add a slight flavor of the type. Approximately 75% of the mixture is the young cheese, and it is thus possible to use cheeses that are likely not to cure well. Recently a chemist suggested the possibility of using the quarter-inch tough rind that covers natural Swiss cheese by reducing it to a fine powder in a hammer mill and adding it to the process mixture up to one-third of the batch. If chemists keep on working at cheese factory problems and if such technical resourcefulness persists, there will undoubtedly be found some way to use the cheesecloth backing for the rind and the process-cheese industry can then truthfully claim that they convert everything but the holes in Swiss cheese into process cheese.

The customary procedure for making process American cheese calls for elimination of paraffin and cheesecloth bandages, the trimming and elimination of rind, moldy areas, or unsavory spots. Then the cheese is cut into strips and ground. The next step is heating and blending the product with some emulsifier such as sodium citrate or disodium phosphate or possibly Rochelle salt to promote the emulsification of the fat and secure a smooth texture. (Rochelle salt is known to chemists as potassium-sodium tartrate—a mild saline purgative.) According to one report, the use of Rochelle salt has occasionally caused the formation of glass-like, calcium tartrate crystals in the process cheese.

It has been discovered that the type of emulsifier used not only affects the body and texture of the mixture but the flavor and remelting properties as well. Process cheese made with sodium citrate, Rochelle salt, or disodium phosphate will likely melt very well when used in toasted sandwiches or cooked dishes, but when sodium metaphosphate or tetra-sodium pyrophosphate is used the resulting product does not melt readily.

Since manufacturers are not required to declare ingredients on the labels of process cheese, the consumer is unable to make use of this very important information to guide her in making a selection. There has been no formal promulgation of a definition and standard for process cheese although the sub-

Process Cheese

Brand	Mfr. or Distrib.	Flavor	Color	Appearance	Body and Texture	Price per lb. paid by CR in the Retail Market
American						
Shefford	Shefford Cheese Co., Inc., Mfr., Green Bay, Wis.	Flat, lacking	Not natural	Good	Texture smooth, no holes, had the gummy quality characteristic of process cheese	58c
Borden's	The Borden Co., Mfr., New York City	Flat, lacking	Not natural	Mold on surface	Texture smooth, no holes, had the gummy quality characteristic of process cheese	50c
Kraft American Pasteurized Process	Kraft Cheese Co., Mfr., Chicago, Ill.	Not much, but more than two above	Good	Good	Texture smooth, no holes, had the gummy quality characteristic of process cheese	46c
Cloverbloom American Pasteurized Process	Armour Creameries, Distrib., Chicago, Ill.	Flat, lacking	White	Good	Texture smooth, no holes, had the gummy quality characteristic of process cheese	46c
Mel-o-Bit American Pasteurized Process	The Great Atlantic & Pacific Tea Co., Distrib., New York City	Flat, lacking	Good	Good	Texture smooth, no holes, had the gummy quality characteristic of process cheese	35½c
Kraft American-Cheddar Process (in tin)	Kraft Cheese Co., Mfr., Chicago, Ill.	Superior	Not natural	Good	Texture smooth, no holes, had the gummy quality characteristic of process cheese	75c (in 7¾ oz. tins)
Swiss						
Shefford	Shefford Cheese Co., Inc., Mfr., Green Bay, Wis.	Fair Swiss flavor	Good	Good	Texture smooth, no holes, had the gummy quality characteristic of process cheese	50c
Borden's	The Borden Co., Mfr., New York City	Flavor lacking	Good	Good	Dry—somewhat tough	50c
Kraft Swiss Pasteurized Process	Kraft Cheese Co., Mfr., Chicago, Ill.	Good Swiss flavor	Good	Good	Texture smooth, no holes, had the gummy quality characteristic of process cheese	40c
Cloverbloom Swiss Pasteurized Process	Armour Creameries, Distrib., Chicago, Ill.	Not much Swiss flavor	Good	Good	Body somewhat mealy	50c
Mel-o-Bit Swiss Pasteurized Process	The Great Atlantic & Pacific Tea Co., Distrib., New York City	Flavor not good	Good	Good	Texture smooth, no holes, had the gummy quality characteristic of process cheese	37c

ject has been under discussion between the trade and the Food and Drug Administration for some time. Under the present Food, Drug, and Cosmetic Act, process cheese should be required to carry a declaration of ingredients on the label. In the spring of 1940, the Food and Drug Administration announced that such a label statement would be required; then it apparently changed its mind and announced that *pending formulation of a standard for process cheese*, such informative labeling would not be required.

In a letter received by Consumers' Research in June 1943, the Food and Drug Administration advised that no definition or standard of identity had yet been set and that the bureau was continuing to use as a guide

the advisory definition and standard previously issued. The only information required on the label of such products at the present time is the words "Process Cheese," the variety, the name and address of the manufacturer, packer, or distributor, and the declaration of net weight.

The term "pasteurized" alone refers to a cheese that has been processed without the use of a chemical emulsifier. On the whole this type is perhaps preferable to the other type, labeled "process cheese." There is, however, very little of this pasteurized cheese product made, according to a Wisconsin research bulletin. Pasteurization is also one step in the manufacture of process cheese, so that the term "pasteurized process cheese" is often found, too.

Still another type of cheese product is the cheese spread or cheese food compound. There are many on the market, many with distinctive brand names, instead of being simply called cheese-food-compound or cheese-spread, with the maker's name. There are several types. Aged Cheddar may be mixed with butter or cream. This is a perishable product and must be kept under refrigeration. Cream cheese may be processed with pickles, olives, pimentos, or flavored with a stronger cheese such as Camembert or Roquefort. Still another type is made by blending process Cheddar with whey, condensed or powdered skim milk, or cream or butter. Since these cheese spreads usually have cheese as a minor const tuent, containing less than 30% by weight of natural cheeses, they require fewer ration points.

Under present rationing restrictions, American Cheddar requires ten points per pound and is priced around 40 to 50 cents, depending on its age. Process American or Swiss also takes ten points and sells for about the same price per pound. It should be borne in mind also that the purchaser is paying for ingredients other than cheese in purchasing the latter variety.

Before rationing went into effect, CR had purchased a number of process cheeses for examination and rating for texture and flavor by an expert cheese scorer at a large Eastern university. According to trade reports sales of cheese have fallen somewhat since rationing went into effect so that stocks of natural cheese are available. Under such circumstances, housewives who are making sandwiches for factory lunch boxes may prefer to purchase the natural unprocessed variety for their men folks, since men as a rule prefer genuine cheese and the ration points required are the same. For those, however, who prefer the process variety we present the recent findings of our consultant, in convenient tabular form. Since no grades have been formulated for this product, and criteria of judgment are not well established in this field, we have not rated the different brands as *A*, *B*, or *C*.

Our consultant commented that process cheese lacks the characteristic cheese flavor of the original cheese. The body and texture are unlike natural cheese, being on the gummy side. All of the process cheeses examined were gummy, but the *Borden Swiss* was drier than the rest, and the *Cloverbloom* was somewhat mealy. The Swiss cheeses for the most part were not characteristic as to flavor; however, the *Kraft* Swiss had by far the best flavor. Of the American process cheeses, the *Kraft American* in tin was the best brand examined, from the standpoint of flavor. It really had a good flavor of Cheddar cheese.

Saving Fuel and Vitamins in Cooking

A SUBSCRIBER writes that the efficiency of cooking may be considerably increased by heating the hot water required in a single pan and then dividing it among the various foods to be cooked (but the hot water should not come from the hot water faucet; it should be cold water drawn from the drinking water tap and heated on the stove just before it is to be used for cooking). This use of water already heated is in line with the advice now commonly given by experts on cooking, to start cooking foods with boiling hot rather than cold water as one way to conserve vitamins. Keeping foods whole (for example, potatoes and beets) and cooking with the skins on, makes it possible to cook several foods in one dish with little water, and mostly by steam, even if one doesn't have a pressure cooker or one of the popular pressure saucepans. The steam does a better job of cooking, and breaks the food open less. The seasoning, such as the now scarce butter, may then be put on at the table, reducing waste, and the result will be more flavorful food than that prepared by the old method, as well as more economical in the use of fuel.

Brushing Your Teeth with Powder

RETURNING an empty tube in order to be permitted to replenish the family supply of tooth paste is necessary to save tin for war production, but as it is something of a nuisance, many consumers have turned to using tooth powder instead. Since powder lends itself readily to packaging in paper or cardboard containers, its container does not require the use of scarce metals such as lead or tin. The natural result has been that many well-known brand names that were formerly associated primarily with tooth paste are now appearing as tooth powders.

As Consumers' Research has pointed out for some years, proper use of the toothbrush is the factor of primary importance in cleaning the teeth—not what is put on the brush. Indeed, it is responsibly held that the use of dentifrice once a day is sufficient.

Those who wished to secure as economical a dentifrice as possible have successfully used CR's formula for tooth powder. This is simply compounded at home by taking finest bolted precipitated chalk, which should cost about 30 cents a pound if you can get it locally, or 45 cents by mail. If desired, baking soda may be added in proportions of 1 oz. to 1 lb. of the powdered chalk. For flavor add a few drops of oil of peppermint to the dry mixture, then mix the ingredients by passing them through a flour sifter or an ordinary sieve. Peppermint has a sharp flavor and should be used sparingly for most tastes.

Those wishing to purchase precipitated chalk by mail may obtain it at prices indicated from the following:

Jacobsen, Inc., Nicollet at Eleventh, Minneapolis 2, Minn. 50c a lb. plus 10c postage.

R. F. Revson Co., 144 W. 18 St., New York 11, N.Y. 45c a lb. prepaid (add 5c a lb. for insurance).

The Lewis Co., 228 Canal St., New York 13, N.Y. 35c a lb. plus postage. (Packed for shipping, weighs 2 lb.)

The chief function of any dentifrice is to aid the toothbrush in the removal of food and loose debris from the teeth. A dentifrice does not serve any other important function, though advertising has made many believe that tooth powders, pastes, or liquids are somehow an indispensable feature of "mouth hygiene." Many of the brands of both powder and paste now on the market are unnecessarily complex, according to the Council on Dental Therapeutics of the American Dental Association.

One factor that is most important in evaluating a dentifrice is its abrasiveness. The American Dental Association does not admit to its listing of "Accepted Dentifrices" any which contain siliceous materials such as pumice or silica, for daily use. The extent of injury caused by excessive zeal in brushing the teeth with an over-gritty substance has not been certainly established, but it is a fact that many dentifrices in the past have been very gritty, and have done harm to the teeth. One drug-trade journal holds that material used for polishing the teeth should not be harder than the tooth. The enamel of the tooth when chemically analyzed has been found to be calcium phosphate in a very pure state, which is so hard that it can barely be scratched with a knife. In the Mohr scale of hardness, tooth enamel has a hardness ranging from 5.5 to 7. Calcium carbonate (precipitated chalk) has a hardness of 3 to 3.5. Other polishing agents include talc with the very low hardness of 1; magnesium carbonate, 2.5; tricalcium phosphate, 4 to 5; and pumice (much too hard), 6 to 7.

There have been a number of studies made of the abrasive action of various dentifrices. One of the earliest, made by W. D. Miller was published in 1907. It is the considered opinion, however, of Sidney Epstein, D.D.S., and M. L. Tainter, M.D., writing in the Journal of the American Dental Association, that the abrasiveness of commercial dentifrices has decreased in recent years. There is some possibility, therefore, that the findings of earlier studies which showed that there were varying degrees of abrasive loss of tooth enamel to be expected from a number of dentifrices then on the market might not be entirely applicable to current brands.

In order to secure some comparisons of products currently on the market, these two researchers made careful tests of the abrasive action on human teeth of a number of present-day dentifrice preparations in comparison with that of standard precipitated calcium car-

bonate (U.S.P.), which was used as a "control" and was given a rating of 100. They found that the variation of abrasiveness of the various tooth powders was large, ranging from 201 for the *Squibb* product to 47 for *Craig-Martin*, the lower figure corresponding to the least abrasive action of any of the commercial dentifrices studied.

Evaluating Flavor

Another factor which should be taken into consideration in evaluating dentifrices is flavor. There are two schools of thought on this subject. The trade considers the use of a flavoring agent, and sometimes a sweetener, necessary to cover the earthy taste of some polishing agents and the taste of soap found in certain formulae.

There is little doubt that those interested in the salability of dentifrices have vied with each other in use of strong and distinctive flavoring materials, in order to make their particular tooth powder or tooth paste stand out from others. This competitive emulation has often resulted in stepping up the amount of flavoring materials used to quite undesirable levels. Flavoring materials commonly used include oils of wintergreen, spearmint, peppermint, cassia, clove, anise, eucalyptus, lemon, bergamot, orange, lavender, and rose. Thymol, menthol, and anethol are also employed. Some of these flavors, such as spearmint and anise, leave a pungent aftertaste.

It would seem that one of the reasons why consumers use a dentifrice in brushing the teeth is not solely to clean them but to eliminate or cover over that dark-brown morning-after (or poor-digestion) taste. Brushing the teeth with a highly flavored dentifrice may give momentary relief but it does not improve the condition of the mouth, as one Dutch researcher has pointed out. Instead stronger and stronger flavors are desired as the taste becomes blunted. Young children whose taste has not yet been perverted by overuse of highly flavored dentifrices are reported by Dr. A. Richard Bliss, Jr., member of the U.S. Pharmacopoeia Committee on Revision (1930-1940), to show a preference for mild, bland, smooth dentifrices rather than those which are sharp, stimulating, or intense in flavor. To avoid perverting a child's taste at an early age, it would appear to be wise for parents to select (or compound, if necessary) a dentifrice with a minimum of flavor or no flavor at all.

In order to correlate flavor with the tests on abrasiveness reported in a recent Journal of the American Dental Association, CR endeavored to purchase samples of the various tooth powders examined. Some that were not readily obtainable or widely sold have been omitted. Those powders and substances which were rated equivalent to precipitated calcium carbonate or less in abrasiveness, and were considered mild in flavor or to have little or no flavor in taste tests conducted by Consumers' Research are listed first, followed by those which were moderately flavored or more abrasive than precipitated chalk, while those which were either more abrasive than the control, or were highly flavored, are listed last.

The tooth powders have been arranged in groups rather than in CR's customary style of *A*, *B*, and *C* ratings because it is believed that none will more safely and effectively aid in cleaning the teeth than the formula given at the beginning of this article. One of the main objections to the use of a trade-brand dentifrice of undeclared composition is that the ingredients of such dentifrices are commonly changed from time to time to provide the advertising department with a basis for some new and startling claim for miracles to be performed on teeth or gums. At one time a product may be comparatively harmless, at another it may possess potential hazards to health. Furthermore, the chemical and toxicologic properties of the new ingredient may be comparatively unknown and its effect on the teeth untried, so that its use can be extolled for some time before some scientific investigator catches up with it and reports his findings in a technical journal.

New Studies

Doctors Souder and Schoonover at The National Bureau of Standards, for example, in the Bureau's Journal of Research for November 1943, have published a study on the abrasion and solution of the teeth by dentifrices which indicated that injury to the enamel and dentin of the teeth may be expected from the use of a dentifrice containing a chemical compound having decalcifying properties, such as sodium metaphosphate. The report further pointed out that the greatest injury could be expected from the use of such a dentifrice if particles of powder were lodged between the teeth or under the gums where they could continue their action on the material of the teeth until finally dissolved in the saliva.

In this connection it is interesting to note that in 1939,

Pepsodent Tooth Powder was accepted for approval by the American Dental Association which listed the composition of the powder as including insoluble sodium metaphosphate and tricalcium phosphate. In April 1941, however, the approval was withdrawn because of advertising claims made for the products. Very possibly, in the light of the current study by the Bureau of Standards researchers, any dentifrice containing a decalcifying substance such as sodium metaphosphate will in the future be held to be unacceptable to the Council on Therapeutics of the American Dental Association.

Consumers may profit by this belated discovery of the harmful properties of a substance that has long been popular in dentifrice formulas and hereafter avoid the use of any dentifrice of unknown composition or one which contains ingredients that have not been thoroughly tested by clinical experience and expert examination and proved to be wholly harmless, and fully acceptable to the American Dental Association, as evidenced by use of its seal of approval, "*Accepted American Dental Association*," in advertising and on packages. It sometimes requires years before experts in the field are certain that a new substance is entirely safe to use.

Group I

Pebeco Tooth Powder (Lehn & Fink Products Corp., Distributor, Bloomfield, N.J.) 10c for 1¼ oz. Mean abrasion factor 85. Flavor mild.

Revelation Tooth Powder (August E. Drucker Co., San Francisco) 21c for 1⅛ oz. Mean abrasion factor 69. Flavor mild.

Calox Tooth Powder (McKesson & Robbins, Inc., Bridgeport, Conn.) 10c for ¾ oz. Mean abrasion factor 91. Flavor mild. Proceeded against by the Federal Trade Commission in 1939 for misleading advertising claims. In the course of the F.T.C. investigation it was brought out that one of the ingredients of this powder was sodium perborate the use of which may result in painful burns and lesions of the gums. On the basis of competent published scientific studies, CR has long warned subscribers of the dangers of using dentifrices containing this substance.

* * *

The following had little or no flavor, but its abrasive factor was considerably greater than that of precipitated chalk and considerably higher than that of the preceding brands.

Williams Dental Powder (The J. B. Williams Co., Glastonbury, Conn.) 10c for 2 oz. Mean abrasion factor 162. Flavor, little or none.

Group II

Craig-Martin Tooth Powder (Comfort Mfg. Co., Chicago) 10c for 2 oz. Mean abrasion factor 47 (least abrasive in the group studied). Flavor moderately sweet.

Fuller's Tooth Powder No. 639 (Fuller Brush Co., Hartford, Conn.) 25c for 3½ oz. Mean abrasion factor 67. Flavor moderately sweet and spicy.

Listerine Tooth Powder (Lambert Pharmacal Co., St. Louis) 10c for 8 oz. Mean abrasion factor 95. Flavor moderately sweet and spicy. Contained a detergent, a chemical substitute for soap, of which harmlessness for use in the mouth is not yet established.

Pepsodent Tooth Powder (Pepsodent, Chicago) 21c for 2 oz. Mean abrasion factor 70. Flavor moderately sweet and spicy, with a sharp aftertaste. Contained a detergent, a chemical substitute for soap, of which harmlessness for use in the mouth is not yet established.

* * *

The following were also moderately flavored but their abrasive quality was in each case considerably greater than that of precipitated chalk and considerably higher than that of the brands in *Group II* immediately preceding the asterisks.

Dr. Lyon's Tooth Powder (The R. L. Watkins Co., Rahway, N.J.; N.Y.C.) 10c for ¾ oz. Mean abrasion factor 166. Flavor moderately sweet.

Iodent No. 1 (The Iodent Co., Detroit) 37c for 4⅛ oz. Mean abrasion factor 187. Flavor, moderately "antiseptic," sweet, and salty.

Squibb Tooth Powder (E. R. Squibb & Sons, Fifth Ave., New York City) 21c for 2½ oz. Mean abrasion factor 201 (highest of the brands here listed). Flavor moderately sweet, with a sharp aftertaste.

Group III

Caroid Dental Powder (The American Ferment Co., Inc., Buffalo) 23c for 1 oz. Mean abrasion factor 112. Flavor sweet, spicy, "antiseptic," with a sharp aftertaste.

Detoxol (The Wm. S. Merrell Co., Cincinnati) 29c for 2-3/10 oz. Mean abrasion factor 92. Flavor very sweet and spicy with sharp aftertaste.

Iodent No. 2 (The Iodent Co., Detroit) 10c for 1-1/5 oz. Mean abrasion factor 152. Flavor very sweet and "antiseptic."

Nordenta Saline Dental Powder (The Norwich Pharmacal Co., Norwich, N.Y.) 29c for 3 oz. Mean abrasion factor 72. Flavor strongly salty, bitter, "antiseptic."

Pycopé (Pycopé, Inc., 2 High St., Jersey City, N.J.) 39c for 2½ oz. Mean abrasion factor 68. Flavor strong, spicy, salty, bitter.

Automatic Heating Controls

"WPB Removes Curb on Controls for Heating to Help Fuel Program." This headline, which appeared in a recent issue of a trade magazine, should be of interest to the many consumers whose coal-fired heating plants are controlled by manual opening and closing of the draft and damper. It should be of particular interest to those families where both husband and wife are away from home for many hours of the day, or when the man is in the Army or engaged in war work, or where, due to extreme shortages in labor, it is no longer possible to hire part-time labor to tend the furnace. The WPB's announcement means in effect that automatic heating controls can be purchased without obtaining a priority or other special permission from a ration board or the War Production Board. It does not necessarily mean that the supply has been increased as much as is needed, but the controls are available and can be located by the diligent consumer who is willing to search the market and perhaps write a few letters to manufacturers, and, above all, who knows exactly what he requires. The purpose of this article is to give our readers an idea of different types of controls that are available, and how they function to regulate the fire and keep a steam or hot-water boiler or a warm-air furnace safe against overheating or explosion.

Thermostats and Damper Controls

What are the advantages that can be secured by adding a thermostat and damper control motor to my hand-fired heating plant? is the first question asked by any person not familiar with the subject. There are, in fact, several advantages:

1. Elimination of frequent trips to the basement and the drudgery of opening and closing dampers and drafts by hand, and altering their adjustment with every change in the weather or wind.

2. Providing more even heat.

3. Permitting the lowering of the temperature in the house at night, or for periods during the day when, due to the absence of the occupants, the usual amount of heat is not needed.

4. The saving of considerable quantities of fuel, through more even regulation of the fire, an item of considerable importance under present scarcity conditions.

5. Thermostatic controls tend to reduce the danger of having a roaring, runaway fire, and to the extent that they do so will serve to protect the equipment, the smokepipe, and the house from a dangerous temperature condition. This safeguard is particularly important for fuels such as high-volatile bituminous coals which respond readily to small increases in draft.

Thermostats

There are several types of thermostats. The most common type (Fig. 1) has a bi-metallic strip A; one end, B, is fixed and the other end (on each side of which are contact points), free to move. Small changes of temperature cause the free end to move to the right or left (as the mercury in a thermometer moves up and down), making contact with either C or D. In the three-wire thermostat (the most common type), points B, C, and D are wired to corresponding terminals in the draft and damper control motor. When the temperature in the room drops below that required, and the bi-metallic strip makes contact with C, one circuit is closed, causing the motor to operate and open the draft and close the check damper. When the temperature in the room where the thermostat is located reaches that desired, the expansion of the metals in the bi-metallic strip will have caused it to move toward the right, so that it stands somewhere between C and D. When owing to a further rise in temperature in the room as heat continues to be produced by the heating system and perhaps from other supplementary sources (as for example the warm sun outside or heat from a kitchen or laundry heater or open fireplace), the moving contact touches the fixed contact D, on the right, the second circuit is closed and causes the damper control motor to operate again in the same direction and *close* the drafts. The wire from point B to the damper motor is common to both circuits. These thermostats can be set to operate at any desired temperature, usually between 55° and 85°F, by merely setting the pointer E to the temperature required. This moves the assembly carrying contacts C and D together in relation to the temperature-sensitive strip A, so that strip A must move further to the right or left before contact is

made with one of the "fixed" contacts, thus establishing a lower or higher temperature at which the draft is opened by the damper motor. At night the temperature can be maintained at a lower value by moving the pointer to 60° or 65°F.

Most of the modern thermostats have a permanent magnet near the moving end of the bimetal strip, to give a "snap-action." This has eliminated most of the troubles experienced with old thermostats when some amount of arcing occurred at the points. Thermostats also tend to "stick" when the points are adjusted so close (in an effort to secure needlessly close temperature regulation) that contact is made whenever anybody walks near the instrument and jars the floor.

Thermostats with exposed contacts may require occasional cleaning of the contact points to remove any surface film or dust and prevent "sticking." This can be done by drawing a piece of thin paper between the contact points. Thermostats are delicate instruments and the home-owner should not attempt to alter or adjust the internal mechanism unless trouble develops which is known to be due to the action of the thermostat itself.

Time-and-Temperature Controls

There are several types of semi-automatic or time-controlled thermostats. In these, the instrument is required to be set manually to maintain lowered temperatures, for example, during the night, then at a predetermined time in the morning, the instrument automatically resets itself to control temperatures again at the daytime normal. This is accomplished in various ways by the different manufacturers. One method is the addition of a small spring-wound clock, similar to an alarm clock, to the type of thermostat already described. The pointer is manually set down to a lower temperature setting upon retiring (or whenever lower temperatures are desired) and the clock wound and set to go off at the time desired. When this time is reached, a small lever in the back of the clock is released by the clock and this pushes the pointer back to the normal or daytime temperature setting. Some manufacturers use an electric clock or timer in place of the spring-wound clock. Another type of semiautomatic thermostat is equipped with two pointers, one of which is set for the day temperature and the other for the night temperature. There is a hand-wound built-in timer with a dial numbered from 1 to 12. On retiring for the night, or leaving the house during a daytime absence, this is set for the number of hours the lower temperature is wanted.

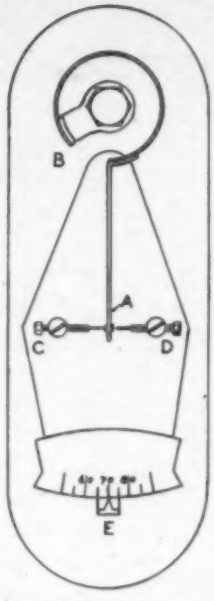

Figure 1

Common type of thermostat with cover removed.

Fully automatic thermostats, which eliminate the necessity for setting the thermostat down manually to a lower temperature, are usually equipped with an electric clock having a built-in switch mechanism and two 24-hour dials, one for setting the time when the beginning of the lowered night temperature is wanted and one for setting the time at which the normal day-time temperature is to be restored.

Mercury-Contact Thermostats

The contact points of the ordinary type of thermostat are subject to contact troubles due to dust or dirt and there will be some deterioration through corrosion or pitting due to the current that is made or broken in starting and stopping the damper motor. To eliminate this, some thermostats use a mercury switch, consisting of an hermetically-sealed glass tube containing two contact points and a small quantity of mercury. The tube is pivoted in such a manner that a small change in its slope in one direction causes the mercury to make contact with the two contact points within the tube, and so closes the circuit. When, due to the action of the bi-metallic strip or other thermometric element, the tube is given a small inclination in the opposite direction, the blob of mercury leaves the contact points and so opens the circuit. The change in slope of the glass tube is governed either by a bi-metallic strip or an expanding and contracting metal-bellows arrangement, the bellows containing a temperature-expansible liquid; to this bellows the glass contact tube is connected

by a simple adjustable lever arrangement. This type of thermostat must be installed in a level position. The disadvantage of the tilting-tube type of mercury thermostat is that it is somewhat sluggish in action. To overcome this the glass tube is made stationary in one type (for given temperature setting) and a light contact attached to the end of a spiral bi-metallic coil is moved into and out of contact with a globule of mercury. A small magnet is included to give positive or snap action without "chatter," when the circuit is to be closed.

Lag in Operation of Controls

In the simple form of thermostat, particularly when used in conjunction with a furnace burning solid fuel, there is a time lag between the time the thermostat calls for heat and when the heat is delivered, and during this period the actual temperature of the room may fall to a point a few degrees below that at which the thermostat is set. Also, when the room has been brought up to the desired temperature, the thermostat operates the dampers to shut off the furnace, but the heat of the fire and of the hot water in the boiler, the radiators, etc., will continue to supply heat for some time after the dampers have been closed, with the result that the temperature of the room will "overshoot" the desired temperature. One method used by some manufacturers to correct this difficulty is to incorporate within the thermostat itself a small electrical heating element which begins to operate when the thermostat calls for heat. This causes the thermostat element to heat up at a little faster rate than it would from the heat in the air of the room alone, and the temperature-responsive element then shuts off the furnace at a point a few degrees before the ultimately desired room temperature is reached. The heat in the radiators, etc., is then sufficient to bridge the gap and bring the room up to the required temperature. This heat-anticipating feature is of great value not only because it keeps the temperature fluctuations in the room from being too great, but because it serves to shut down the drafts in a furnace before the fire has gotten to too-high temperatures. Under certain conditions, even two minutes' time may be sufficient to allow a furnace-fire really to pick up and get going.

Many people have probably noticed that at certain times, even though the air temperature at thermostat level may read 70° or more, the house feels cold and uncomfortable. This occurs in the period after the temperature of the room has overshot the desired temperature, resulting in a long "off-period" before the thermostat again calls for heat. This long off-period permits the radiators to cool down to a point where a layer of cold air produced by contact of the air in the room with cold windows, walls, and floors, and outside air infiltering into the room, builds up from the floor level, causing air stratification, and produces what is known to heating engineers as "cold 70." Not being aware of the cause of this condition, many householders will raise the setting of their thermostats to 75 or 80°, which not only burns 12% to 25% more fuel than if the setting were at 70°, but does not really correct the condition. One way to improve this condition is to install a thermostat having a preheating or heat-anticipating device previously discussed. This causes the furnace to operate more frequently and for shorter periods, instead of less frequently for longer periods. The "cold 70" condition, rather paradoxically, is chiefly a problem in relatively mild weather, for, in very cold weather, the on-periods for the furnace are relatively frequent and the layer of cold air does not have time to form, as the radiators do not have time to get cold. "Cold 70" is also very noticeable in homes where the heating system is "oversize," i.e., too large for the size, exposure, and other conditions of the house. Relocating the thermostat to a point 24 to 36 inches above the floor is another method which will frequently help to maintain a steady air temperature in the living zone, without need for changing the type of thermostat or making other more troublesome change in the controls of the heating system.

Some manufacturers place great stress upon the sensitivity of their thermostats, claiming positively uniform room temperature. Actually, a high degree of constancy of room temperature is neither necessary nor desirable, for experts in the field of the body's reaction to temperature have long known that slight *variation* or unsteadiness in temperature of the air is better for health and sense of well-being than temperatures held to close uniformity.

Thermostat Wiring

Consumers who already have a thermostat and damper motor installed on their heating system may have occasion to replace, due to a breakdown, either the thermostat or the

damper motor. When this occurs, they may not be able to replace the defective part with another of the same make, but have to use a substitute make. However, because of difference in circuit design, the different makes are often not interchangeable and this should be clearly understood before any purchase is made.

In the three-wire system already described under *Thermostats*, when the temperature falls, one circuit causes the damper motor to open the draft and close the check damper. The damper motor stays in that position until the temperature rises again; then the first circuit is broken and after a temperature interval known as the "thermostat differential" is passed through, the second circuit is "made," causing the motor to operate again (in the same direction), closing the draft and opening the check damper, so checking the fire. After a time, the house cools off by loss of heat through walls, doors, roof, windows, etc., the temperature falls a few degrees, the thermostat again "calls for heat," and the cycle is repeated.

There is another type of three-wire thermostat which makes contact with each of two circuits when the temperature falls. This type is not suitable to control a three-wire damper motor directly, nor is it suitable to control a two-wire damper motor. The remaining type, the two-wire system, simply makes and breaks one electrical circuit in response to a rise or fall in temperature. It is designed for use with a *two-wire* damper motor; it can, however, be used with a three-wire damper motor, providing a relay is installed to make the transfer of energy from the two-wire circuit to the three-wire damper motor system. As these relays are expensive, there is no point in trying to install a three-wire damper motor on a system using a two-wire thermostat unless it should be necessary because the two-wire damper motor (which is not so common as the other type) is not obtainable. Two-wire or three-wire systems can be equally satisfactory in actual operation. Most of the two-wire damper motors are of the so-called "heat motor" type, that are actuated by an electric heater element that pushes a bellows upwards. That is, when the room thermostat demands heat, an electric coil is energized and a liquid is heated; this on expansion actuates a bellows that in turn pushes up a damper arm. These motors are cheaper than the regular slow-acting rotary electric motor, but some makes are of poor design or workmanship. Most damper motors of this type are positive-acting (that is will move upwards the full stroke) when the motor is heat-energized, but some of them require some amount of adjustment in the field in order to make them act with certainty on the down stroke. These motors usually rely on a spring attached to the draft door to return the furnace to the "off" condition. As long as the thermostat is calling for heat the damper motor actuating arm or wheel will maintain its position against the tension of the spring. When sufficient heat has been supplied and the thermostat circuit is opened, or in the event of power failure, the spring becomes free to function, turns the motor back to its original position, and shuts the furnace off. The spring return may in some cases be too light; in which case the damper motor may move through only 60 or 70% of its full stroke. If the heating contractor installs this type of motor, the homeowner should satisfy himself that the lever arms do give sufficient movement definitely to open and close the furnace damper.

Function of a Thermostat

Many people, particularly women, have a totally erroneous idea of just how a thermostat works, and consequently, by their manipulation of the setting of the room thermostat, are responsible for considerable waste of fuel. To illustrate this point, assume that you have a room in which the temperature is 60°, but the room thermostat is set at 70°. Under such conditions, the thermostat is calling for heat and the furnace draft is open. Now, many people believe that if they set the thermostat to a high temperature, heat will be obtained more quickly. This is not at all the case, for the thermostat only has the power to turn the furnace *on* or *off*. It can, so to speak, say "yes" or "no" to the furnace, but not "a little more heat," or "a lot of heat right away." Thus *it does not open the drafts any wider* when the thermostat is set at 85° or 90° than when it is set at 70°. In other words, whether the draft is open or shut depends upon whether the temperature of the thermostat setting is higher or lower than the temperature of the air in the room around the thermostat. With the room thermostat set up, for example, to 85°F., the temperature will come up *at the same rate as if the thermostat were set at 70°*, but instead of shutting the furnace off at 70°, it will not shut off until the room temperature goes far

above what is wanted, and reaches 85°, resulting in a badly overheated house and waste of fuel. This method of manipulating the temperature control of course results in waste of heat, and often the rooms will be made so hot before the thermostat is finally set back that it will be necessary to open a window or door to cool them off, or run the risk of catching cold from continued excessive temperature.

Room-Thermostat Location

Usually room thermostats are located in the living room on an inside wall away from floor- or wall-lamps and other extraneous heat sources. It must be remembered that people do not live on the wall, and that a room thermostat will control the temperature only at the wall location where it is. Since the owner is interested more in the air temperature in the middle of the room, the setting of the room thermostat should be such that the temperature at the middle of the room is at the desired figure, regardless of what setting of the thermostat this calls for. Some people become "thermostat fiends" and continually juggle the room thermostats, and continually complain because the thermostat doesn't act right or its thermometer read right. In general, it would be better, probably, if all thermometers were removed from thermostats and the degree dials marked only with the words, warmer or cooler.

Thermostats are more responsive in a room that has more exposure. However, the sun room is ordinarily avoided since it is subject to solar influences more than any other room.

The most desirable height of room thermostats would be about 30" from the floor, in the "living zone." This is not practical (and may actually be hazardous from a safety point of view) in a home where small children may tamper with the instrument, or where chairs or tables may bump it. About 4 to 5 ft. from the floor may be a practical "compromise height" in homes with children.

If an instruction sheet comes with the thermostat, retain it in a permanent file for future reference by either the owner or by the serviceman.

Manufacturers

For the benefit of subscribers who may wish to correspond with manufacturers of heating controls, the following list of some of the better-known manufacturers is given:

Barber-Colman, 229 Loomis St., Rockford, Ill.

Detroit Lubricator Co., Detroit (offices in N. Y. C., Chicago, Los Angeles).

General Electric, Schenectady, N. Y.

Mercoid Corp., 4201 Belmont Ave., Chicago; 393 Seventh Ave., N. Y. C.; 3137 N. Broad St., Philadelphia.

Minneapolis Honeywell Regulator Co., Minneapolis. Branches in many large cities.

Penn Electric Switch Co., Goshen, Ind.

Perfex Corporation, 500 W. Oklahoma Ave., Milwaukee.

Powers Regulator Co., 2720 Greenview Ave., Chicago.

White-Rodgers Electric Co., 1209 Cass Ave., St. Louis.

Thermostatic heating controls are also distributed by the larger mail-order houses, Montgomery Ward & Co. and Sears, Roebuck & Co.

Contributions to CR Not Taxable

It has been suggested that we answer, via the *Bulletin*, the question as to whether contributions made to Consumers' Research, Inc., for its work and studies for ultimate consumers are deductible for income tax purposes. We are glad to give the following information, which will be of interest to those subscribers who may have been in doubt as to whether they are allowed to make such deduction from their income in arriving at their taxable net income.

The Treasury Department, Washington, D.C., in a letter advised us as follows, with respect to contributions made to Consumers' Research, Inc.:

> Contributions[1] to your organization by individual donor are deductible by such individuals in arriving at their taxable net income in the manner and to the extent provided by section 23 (o)[2] of the Revenue Act of 1938, or section 23 (o)[2] of Chapter 1 of the Internal Revenue Code.

Editor's Notes:
[1] Beyond the subscription price.
[2] Referring to the right of deduction from income of contributions to non-profit corporations, foundations, etc., organized and operated exclusively for certain purposes (including scientific and educational).

Anti-Freeze Testers

ANTI-FREEZE testers are essentially the same as battery hydrometers in that they measure the specific gravity of the liquid by use of a hydrometer float. However, the floats of anti-freeze testers, instead of being marked in specific gravity numbers, are either marked in degrees of temperature at which the solution will freeze or in letters which, when used with a chart accompanying the instrument, give the freezing point of the solution being tested.

The Office of Defense Transportation has printed the following requirements for anti-freeze testers prepared by a committee of the Society of Automotive Engineers, to provide the needed accuracy in use:

1. All-glass float with scale at least 2 inches long and not less than 13 divisions covering the range of commonly used concentrations.

2. Range of thermometer scale 60° to 160°F, with temperature graduations not coarser than 10 degrees.

3. Correction chart with same number of divisions as float and thermometer scales.

Very few indeed of the anti-freeze testers sold for consumers' use will conform to these specifications. Only one in CR's test met them. The reason for this is that adding a thermometer and correction scales increases the cost, and as consumers are not aware of the vital need for these two features they are unwilling to pay for anti-freeze testers a price high enough to provide for inclusion of these essentials. Some manufacturers get around this by calibrating their floats for "hot" and "cold" solutions, usually at 60° and 160°F, which are meant to be crude approximations to the average wintertime temperatures of the radiator solution when the engine has been standing and after running, respectively. The floats in this type of hydrometer are provided with two scales for each solution tested, one marked for "hot" solutions and one for "cold" solutions.

The temperature at which the solution is measured is very important, and the simple hydrometers without a thermometer or temperature correction chart *can be accurate only for one temperature of the solution to be tested.* To illustrate this, assume that a radiator is protected to 0°F with either ethylene glycol or ethanol (denatured alcohol). If measured with a simple hydrometer calibrated at 60°F, it will give a reading corresponding to a freezing point of 0°F when the temperature of the solution is 60°F, but if the temperature of the solution were 160°F, a 20 to 40° lower or higher freezing point will be indicated—so far off, indeed, that the use of the hydrometers without applying the proper correction would be valueless.

Many hydrometers have scales for testing of ethylene glycol which are supposed to be satisfactory for testing such products as *Prestone*, *Zerex*, and other ethylene glycol solutions. Unfortunately, they are not. For example, even though, for protection to equal temperatures, equal volumes of *Prestone* and *Zerex* are needed, they use different inhibitors which result in different specific gravities. Thus if *Zerex* is measured with a float calibrated for *Prestone*, the error may be as much as 10 or 11 degrees at the concentrations of solution used for protection at very low temperatures, when measured at high solution temperatures (at low solution temperatures, the error is considerably smaller).

Measurement of the freezing point of anti-freeze solutions has been rendered more difficult this year by shortages of certain brands, which has resulted in consumers having to add a quantity of a different brand or type to the anti-freeze carried over from last year. Mixed solutions of ethylene glycol and alcohol cannot have their freezing point determined by the hydrometer method. (A method, but not an easy or convenient one, for ascertaining the freezing temperature of such mixtures was given in CR's October 1943 Bulletin.) Those who have had to add *Zerex* to *Prestone*, or vice versa, should probably play safe by assuming that the protection afforded is at least 10° less than that read on the hydrometer.

Anti-freeze testers should be thoroughly cleaned after use; otherwise the oily inhibitors used in some anti-freeze solutions will stick to the sides of the glass barrel, harden with time, and be difficult to remove. The hydrometer-float graduations, most of which are difficult to read even when the glass syringe barrel is clean, will be almost impossible to read when the glass is clouded with dirt or scum. To clean, mix about one teaspoon of Tetrasodium Pyrophosphate (tspp.) in a pint of fairly hot water and by working the hydrometer bulb, draw this up into the barrel several times, until the deposit is removed; then rinse with clean water.

The following ratings are based on tests for accuracy with ethanol (denatured alcohol), methanol, and ethylene glycol in three concentrations, 20%, 30%, and 40% by volume. Consideration was also given to ease of reading and operation. As it is important that an intending buyer shall be able to avoid the purchase of a poor type of hydrometer, we have given a rather full description of each instrument; this will enable the observing consumer to distinguish one make from another (hydrometers generally are very poorly

identified and marked by their makers).

B. Intermediate

Break-Not (E. Edelmann & Co., Chicago) Until recently dist'd by Montgomery Ward as *De Luxe Anti-Freeze Tester*, 61—3864, $1.19 plus postage. Float marked No. 1021. Scale 4⅜ in. long with 19 divisions lettered A to S, very well printed, and easily read. Built-in thermometer, graduated 60° to 160° x 10°, for determining temperature of solution. An attachment made of thin metal, hinged to the syringe barrel by means of a wire clamp, carries four charts applying to alcohol, du Pont *Zerone* (methanol), ethylene glycol, and du Pont *Zerex*. Reading is taken by noting the float scale letter at the top of the sample of radiator solution drawn into the hydrometer barrel and the temperature shown on the built-in thermometer. Reference to the chart for the type of solution being tested using the temperature and the float scale letter observed gives the freezing point of the solution. Subscribers purchasing this tester would do well to check the thermometer approximately for accuracy when received, and if error (at room temperature, for example) is found to be more than 8 or 10 degrees (as it was in some samples examined by CR), either return it for replacement or make the necessary allowance for the error in using it. For determining the freezing point of solutions tested at or near 60°F, this hydrometer was found to be accurate, but was seriously inaccurate at 160°.

C. Not Recommended

Anti-Freeze Float (Kimball Glass Co., Conshohocken, Pa.; distributed by Montgomery Ward's Retail Stores) 10c (float only). Designed for testing ethylene glycol +20 to −30 on blue band, alcohol +30 to −30 on white band, methanol +30 to −30 on pink band. Marked: "calibrated at 60°F." No provision for testing at other temperatures. Errors in freezing point determination as high as 9, 12, 13, 16 degrees.

Beck Freezemeter (Oscar Beck, 68 Warren St., Newark, N.J.; distributed by Pep Boys Auto Accessory Stores) 55c. Float identical with that used in *Zenith*. Float stuck to sides of syringe, making correct reading impossible.

Everbest Freeze-Meter (Western Auto Stores) 49c ($1.35 printed on box). Float identical to that used in *Zenith*. Unsatisfactory design, as bottom of float sealed syringe outlet, preventing easy removal of test solution.

Sears Anti-Freeze Tester, Cat. No. 28—7852 (Distributed by Sears, Roebuck & Co.) 52c plus postage. For testing ethylene glycol, alcohol, and methanol on green, yellow, and pink bands, respectively, for "cold" readings at 40°F; and all graduations on black backgrounds are for "hot" readings at 140°F. All scales read from +10 to −30. Scale 1⅞ in. long, somewhat difficult to read. Inaccurate.

Wards Anti-Freeze Tester, Cat. No. 61—3843 (Montgomery Ward & Co.) 55c plus postage. Float designed for testing ethylene glycol, "hot" and "cold," from +10 to −30, alcohol hot and cold from +10 to −30, and methanol +10 to −30 cold, +10 to −40 hot. Scale 2⅛ in. long. Figures for hot solution (160°F) printed in red; for cold solution (32°F), in black. Scales difficult to read; graduation scheme unduly complicated.

Zenith Radiator Freezemeter (Distributed by Penn-Jersey Auto Accessory Stores) 44c. For testing glycerin +10 to −30 on green band, *Prestone* +20 to −30 on yellow band, alcohol −30 to +30 on white band, and *Zerone* (methanol) +30 to −40 on red band. Also marked "calibrated at 60°F." No provision made for testing solutions at other temperatures. Graduation scale very unsatisfactory, extremely difficult to read.

Anti-Freeze Solutions

INADEQUATE local supplies of approved types of automobile radiator anti-freeze in certain regions of the country has resulted in the WPB's lifting the ban against manufacture of three petroleum distillate (similar to deodorized kerosene) type products, *No-Freeze*, *Freeze-Proof*, and *Safas*. (*No-Freeze* received a not recommended listing in CR's February and November 1943 BULLETINS.) These products, while not corrosive like calcium chloride and other salt solutions, do have a deleterious effect on rubber hose used in automobile radiator systems, but the WPB believes that "with careful handling, [they] should not destroy rubber hose connections in automobile cooling systems during the freezing season."

CR recommends that petroleum distillate type products, such as those now tolerated by WPB, should be used only as a last resort, when it is impossible to obtain the needed amount of an approved type of anti-freeze, such as ethylene glycol or denatured alcohol (ethanol), and that they be removed from the radiator promptly when danger of freezing is past. Not only do they have a bad effect on rubber hose, but when subjected to overheating they give off a highly flammable vapor. Compared to water solutions these kerosene-like liquids have a much lower factor of safety against overheating due to their high boiling point, 100° to 200° above the boiling point of water. Calcium chloride solutions are of a much more harmful sort, and should never be used under any circumstances. Calcium chloride solutions are easily distinguished by their weight per gallon, which runs to about 10½ to 11½ lb. Kerosene-type products, weight 6¼ to 7 lb. per gallon.

Winter Motor Oils

THE SELECTION of the correct viscosity of oil to use in winter should be based on the lowest temperature expected in the locality in which the car is used. Many drivers rely upon the advice of service stations as to what viscosity of oil to use. This, however, is not always a wise procedure, for the manufacturer of your car, in cooperation with the Society of Automotive Engineers, has determined upon the viscosities of oil most suited to the engine under different weather conditions, and these figures usually appear in the instruction book that comes with the car. For average conditions of operation and the majority of passenger cars, the preferred viscosities for use at different seasons and climates will approximate the figures given in the following table:

Temp. above 32°F. . . SAE 30 (or possibly higher if the engine is old or worn)
Temp. above 10°F. . . SAE 20 or 20W
Temp. above −10°F. . . SAE 10 or 10W
Temp. below −10°F. . . 10W diluted with 10% kerosene

These recommendations may vary slightly for different types of operating conditions. For example, it may be advisable for a driver who uses his car for frequent short trips and very little driving to considerable distances to use a somewhat lighter oil than specified above.

Advertising of motor oils claiming special properties and virtues of any sort should be disregarded almost 100 percent, for such properties usually exist only in the advertising writers' imagination. The most *important* property of any motor oil, that is to the consumer, rather than the salesman, is its *viscosity index*, a property that is seldom, if ever, mentioned in the advertising. An oil with a high viscosity index is relatively little affected by changes in temperature in its ability to flow, whereas an oil with a low viscosity index becomes too thin at high temperatures, or too thick at low temperatures Oils, however, can have a high viscosity index and yet have a high pour point (the temperature at which the oil congeals and ceases to flow; the lowest possible pour point is desirable in very cold climates). Such oils, which can be perfectly satisfactory with operation at normal engine temperatures, will

Brand	*Mfr. or Distrib.*	*RATINGS* 10W	10	20W	20	30
Alemite	Alemite Corp.	A	A	A	B[1]	B[1]
Cities Service	Cities Service Oil Co.	C†	C*	A	—	C*
Conoco Nth	Continental Oil Co.	A	—	A	—	B*
Co-op 100	Farmers Union Oil Co.	B†	B*	A	A	B*
Gamble's Penn	Gamble Stores Inc.	—	B*	—	C*[1]	C*[1]
Havoline	The Texas Co.	—	A	—	A	B*
Iso-Vis	Standard Oil Co.	—	B†	—	B*	B*
Kendall	Kendall Refining Co.	C*†[1]	A	C*†[1]	—	A
Koolmotor	Cities Service Oil Co.	B†	B*	B[1]	C*[1]	B*
Long Run	Western Auto Supply Co.	—	—	—	C	—
Lubrite	Socony Vacuum Oil Co.	A	—	B*	—	C*[1]
Mobiloil Arctic	Socony Vacuum Oil Co.	A	A	A	A	A
Motorine	Continental Oil Co.	—	—	—	C[1]	—
Opaline	Sinclair Refining Co.	B	—	B	—	B
Penn Supreme	Western Auto	—	B*	—	—	B*
Penn Union	Farmers Union Oil Co.	A	B*	A	C*[1]	C*[1]
Pennzoil	Pennzoil Co.	B*†	B*	B[1]	—	B[1]
Phillips 66	Phillips Petroleum Co.	B	—	B	—	B*
Polarine	Standard Oil Co.	B	C†	B	C*	C*
Purol	Pure Oil Co.	C†[1]	C*	B	C*	C*
Quaker State	Quaker State Oil Co.	A	A	B[1]	—	C*[1]
Richfield Penn	Richfield Oil Co.	—	—	—	B*	—
R.P.M.	The California Co.	—	A	—	B*	A
Signal Penn	Signal Oil Co.	—	—	—	B[1]	—
Sears Argosy	Sears, Roebuck & Co.	—	C*	—	C*	B
Sears Cross Country	Sears, Roebuck & Co.	—	B*	—	—	B*
Sears Gold Crest	Sears, Roebuck & Co.	—	—	—	—	C
Sinclair Penn	Sinclair Refining Co.	—	—	B[1]	—	A
Standard Penn	Standard Oil Co.	—	B*	—	—	A
Stanolind	Standard Oil Co.	B	—	B	—	C[1]
Tagoline	Skelly Oil Co.	A	—	—	B*	B*
Texaco	The Texas Co.	A	—	—	B	C*
Tiolene	Pure Oil Co.	—	A	B[1]	C*[1]	A
Wards Commander	Montgomery Ward	—	—	—	C	—
Wards Motor Guard	Montgomery Ward	—	B†	—	B[1]	—
Wards Supreme	Montgomery Ward	—	A	B[1]	—	B[1]
Wolf's Head	Wolf's Head Oil Refining Co.	C†[1]	A	B[1]	—	C*[1]

* Pour point too high
† Misbranded as to viscosity
[1] Carbon residue too high
A dash for a given oil in any column indicates that no sample was tested for that viscosity.

cause hard starting in winter. Correct rating of oils gives chief weight to viscosity index, to make sure that the oil properly maintains its consistency under varied driving or running conditions. Pour point may be important in severe climates to make sure that a cold-day start will not be made impossible because the oil has stiffened up or gotten so thick that the starter cannot turn the engine over fast enough for it to get going promptly under its own power.

The ratings in the table are based on tests made by the State Governments of North Dakota and Nevada. The ratings themselves are by Consumers' Research and are based on four factors: (1) correct labeling of the oil as to SAE number; (2) viscosity index; (3) pour point; and (4) carbon residue. Out of the 114 oils reported, 28 failed to meet the limits of Navy or Federal Specification Board Specifications for carbon residue, which represents a considerable deterioration in this respect from prewar oils. Some of the ratings may err on the side of leniency, since there are quite a number of oils which fail to meet the Navy viscosity specification applying at a given temperature. CR considers that conformity of an oil to the requirement of a *high viscosity index* (small *change* of viscosity with temperature) is of considerably greater importance than its simply meeting a stated viscosity figure for a single temperature.

There seems to be little likelihood that automobile oil will be rationed, for, as oil consumption is directly proportional to gasoline consumption, the rationing of gasoline in effect rations oil. There would thus seem to be no reason for consumers to buy more oil at this time than about the amount considered necessary to provide for the gasoline mileage the ration board allows.

Off the Editor's Chest

(*Continued from page 2*)

years or more, in a great volume of writings and lectures of liberal authors and publicists, was represented as the ideal plan and goal for industry and trade.

Vice-president William Benton of the University of Chicago recently spoke of a British industrialist who declared that postwar collaboration of the United States and Britain must be predicated *on the repeal of the American anti-trust laws*. Competition was regarded by the English magnate as the forerunner of industrial chaos; the typical British big-businessman not only "welcomed monopoly, but also welcomed Government as a business partner, looking to it to control competition and provide security."

There have long been in England powerful trusts, or combines as they are known there, in many basic products, such as soap, sewing cotton, dyeing and bleaching, salt, rubber, iron, steel, tin, coal, copper, piping, nails, enamelware, and several types of machinery. As far back as 1884, an international pool system of British, German, and Belgian capitalists was established to divide up export business in steel rails and secure the home trade for the home companies. In 1926, this association set up premiums for the firms that fell below their production quotas, and penalties for those that exceeded them.

The famous British Stevenson rubber cartel (1922-1928) at one time lifted the price of crude rubber to $1.25 a pound when production costs were less than one-fifth of that amount, possibly a good deal less even than that. This cartel not only set up restrictions on production of rubber, but even forbade the exportation of Hevea rubber seed. It is now known that reliance upon the British-Dutch rubber cartel, which succeeded the Stevenson cartel, was one reason why America did not have either an adequate rubber stock pile at the beginning of the War, or the beginnings of large production of synthetic rubber.

There is now growing up a marked governmental propaganda for a cartel system for the United States, which officials will seek to justify on the ground that business alone cannot deal with foreign markets but needs a governmental overlord to control prices, divide up the market, regulate profits, penalize firms that will not play the game properly, and to fit in with plans like the British proposal to standardize wages on an international basis. A very recent development of the sort is the discussion of an international leather cartel which is being worked out between principals in the United States and Great Britain *to provide a percentage formula for the world distribution of hides and leather*. "The formula cannot be made public," according to a New York newspaper, but the program is now up for approval in Washington. A British-dominated monopoly pool controls supplies of the most desirable type of vegetable extract used in the tanning of leather. This pool is reported already to have had the effect of preventing the building of a stock pile in the United States. It is well known that there have been similar monopolies choking off supplies of tin, and of dyestuffs and other indispensable chemicals.

Thurman Arnold, formerly Asst. Attorney General in charge of anti-trust prosecutions, has well

stated that any development which tends to "freeze the economic life of the nation into a rigid pattern" is definitely dangerous to American ideas, and the "choice lies between a cartel economy, which will usher in another decade of restricted production, high prices and low turnover, and a new age of commercial freedom."

While some lawyers in the Department of Justice would like to continue and revive the trust-busting policies of an earlier era, other officials feel that such economic and legal ideas are outmoded and that America should without further ado adjust itself to a cartelized world economy, fitting its huge monopoly-production concerns into a world system of cartels, with the idea of "stabilizing prices," "regularizing employment," and using prices and supplies of goods as means for punishing some nations and rewarding others for their attitudes toward the dominant trading nations. Some preliminary organizations of this sort have already been set up by Washington officialdom in such agencies as the Petroleum Reserve Corporation, whose function is apparently to deal, as private risk-takers used to, with foreign oil concessions and exchanges. The Petroleum Reserve Corporation "is definitely in international big business."

It should be noted in passing that there is one school of thought which holds that some sort of cartel arrangements with respect to foreign trade will be necessary, at least as a defensive measure in post-war years, to enable producers in the United States to compete successfully for a share in foreign markets against countries in which state monopolies, combines, or cartels are strongly established. Actually, monopolies under whatever name they are called are bad performers. Monopolistic enterprises tend to continue the wartime practice of *restricting* and *dividing* what is produced and so penalizing the high-efficiency, high-output firm; they do not follow the policy of applying the greatest initiative in improvement of products and increasing production to the practicable limit, then allowing the price level to fall to where it will as a result of the increased supply of goods competing for consumers' dollars.

Monopoly controls for many years kept cheap electric fittings and other handy electrical and mechanical gadgets out of 10-cent stores and other low-priced stores, and made the installation of electric wiring outrageously expensive and wrapped up in complicated codes and rules set up by big-business interests, which exercised much ingenuity and persistence in making rough the road of small-firm competition.

The consumer will in the near future hear many arguments depicting the advantages to the nation of a cartelized, monopolistic system of industry. He may comfort himself with the thought that discussions of this question are an old story to German and French readers, too, and that the effects on the national prosperity and well-being which flowed from the type of tie-up between big business and government that powerful interests in Germany and France favored for two generations, are now all too evident.

The management and financing of industry should be left in private hands. When it is there, the public has a chance of knowing what goes on and of keeping a degree of control over it. This chance consumers do not have when government and business negotiate monopoly agreements; such agreements, whomever they may benefit, invariably turn out to the disadvantage of consumers and taxpayers. No governmentally-sponsored price-fixing, market-dividing industrial combination has ever yet given consumers a fair deal, or even made serious pretence of doing so.

Vitamin Values Related to Flavor in Foods

WE HAVE long had a suspicion that vitamin values were related to flavor qualities in foods, for foods high in vitamins are usually *fresh* foods, and foods that have stood, or been exposed to air or light have frequently lost vitamin values and as everyone knows, have also lost their fresh flavor and bouquet. It is known, for example, that the darkening in color which occurs in storage of dried and dehydrated apricots, peaches, pears, and apples indicates loss of vitamins along with change of flavor.

Studies of technical literature on food processing now indicate that methods of storage and preparation for the table which best preserve palatability, including aroma, color, flavor, and texture, are usually those which also preserve the essential food factors. (Of these vitamin C is most easily subject to deterioration in handling, storage and processing.) Keeping vegetables and fruits cool and preventing losses of moisture from their tissues favor retention of vitamin values (A and C). Vitamin A seems particularly affected by drying out of the food. Hence the desirability of keeping vegetables in a special container (as usually found in refrigerators) designed to prevent evaporation of naturally contained moisture. Soaking, peeling, and cutting are the preparation processes that mostly account for loss of vitamins and minerals. Quick cooking of vegetables and fruits, with a minimum of water causes least deterioration. Steaming, panning, or pressure-saucepan cooking were the methods deemed most satisfactory.

Mechanical Pencils

A. Recommended

Autopoint (Autopoint Co., 1801 W. Foster Ave., Chicago) 35c up to about $1.25 or more, depending on size, finish, and other features. Available for both .036 and .046 inch diameter short leads (1⅜ inches long). This make is easily the best in its field. Forward movement of lead slow (sensitive). Mechanism of excellent design and workmanship. If colored leads are to be used, it will be wise to purchase those of *Autopoint* make. Caution is necessary in use of colored leads, especially in the smaller (.036 inch) diameter, since a good mechanical pencil may easily be damaged by attempts to remove a colored lead which has been broken or crushed in the point section.

* * *

The big seller as a Christmas gift in the mechanical pencil field this year seems to be the *Eversharp* "repeating" type pencil. This is similar in manner of operation to certain makes of mechanical pencils that had some vogue a few years ago, but were not successful, because of poor mechanical design. The *Eversharp* is operated by pressure of the thumb on a button at the top; when pencil is held vertically with point down, each thumb-stroke feeds out just about enough lead for a new writing point. The extra leads contained in the barrel are fed into the point section, as needed, one after another. This is an attractive feature, for time is lost, sometimes when it cannot be spared, in use of the ordinary screw-feed mechanical pencil, in inserting new leads, one at a time.

B. Intermediate

Eversharp (Eversharp, Inc., 1800 Roscoe St., Chicago) "Repeating" type pencil priced at $2 to $6, depending upon character of ornamentation. (The high-priced pencils are mechanically like the cheaper ones, but carry silver or gold ornamentation; on this account many of these pencils carry a jewelry tax of 10%.)

A weakness of this type of pencil is that it is available only for use with "square"-type short leads, 1⅜ inches long by .046 inches in long diameter. The diameter of these leads is too large to give satisfactory writing performance as compared with a well-sharpened old-fashioned wood pencil. The extra-thin lead (.036 inch diameter) which gives a more satisfactory (finer) writing-line would be too weak for use with the mechanism of the push-button type feeding device. The present listing is based on a fairly short period of use of this pencil. More experience in use with it might justify a less favorable rating.

THE FOLLOWING mechanical pencils have been found to have or develop unsatisfactory qualities in some respect during a period of use:

Screw Feed Type, Fine Lead (.036 inch)

Sheaffer's (W. A. Sheaffer Pen Co., Fort Madison, Iowa) $1, up.

Dixon Rite-Rite Threadline (Rite-Rite Manufacturing Co., 1501 W. Polk St., Chicago) 49c.

Parker (The Parker Pen Co., Janesville, Wis.) $1, up.

Repeating (Push-Button) Type, Larger Lead (.046 inch)

Esterbrook Push Pencil (Esterbrook Pen Co., Camden, N. J.) $1.

Presto.

Multicolor Mechanical Pencil

Norma (Norma Multikolor, Inc., 39 W. 32nd St., N. Y. C.) $2 for three-color; $3, up, for four-color. An attractive novelty, but bulky and rather unwieldy in use.

Public Wasting Money on Vitamin Pills, Tablets, Capsules, Liquids

THE CURRENT very active campaign of misleading advertising in magazines and newspapers and on the radio for vitamin and mineral preparations makes very timely a comment by Dr. Frederick J. Stare of the Harvard University Schools of Medicine and Public Health. Dr. Stare remarked that the current "vitamin racket is reminiscent of patent medicine days" and flourishes as a result of misconceptions regarding the prevalence of vitamin deficiencies. Misleading advertising has made the public "believe that a half to two-thirds of the entire population is malnourished."

"The use and abuse of vitamins simmers down to whether there is any need for them in the specific case in question. If one is weak, tired and fatigues readily the person believes he is one of the two-thirds of the population that is not properly nourished. That may be the case, but it also may not be so. The result, unfortunately, is a tremendous misuse of valuable and expensive material. In most cases a more intelligent approach would be to improve one's selection of food—that is if nutrition is at fault. . . . vitamins are only part of nutrition and there is no evidence that man will become less fatigued, experience any fewer colds, or have more general resistance to disease by consuming 'extra' amounts of the various vitamins.

"Good nutrition comes from a wide choice and a wide variety of wholesome food, not from a poor diet supplemented with vitamin and mineral preparations."

Ratings of Motion Pictures

This section aims to give critical consumers a digest of opinion from a number of reviews, ranging from the motion picture trade press to Parents' Magazine, which rates motion pictures not only on their quality as entertainment but on their suitability in various aspects for children.

It should be emphasized that the motion picture ratings which follow do not represent the judgment of a single person but are based on an analysis of the reviews appearing in some 20 different periodicals. The sources of the reviews are:

Box Office, Chicago Daily Tribune, The Christian Century, Cue, Daily News (N.Y.), *The Exhibitor, Harrison's Reports, Liberty, Mademoiselle, Motion Picture Herald, Motion Picture Reviews* (The Women's University Club of Los Angeles), *National Legion of Decency List, Newsweek, New York Herald Tribune, New York Times, Parents' Magazine, Release of the D.A.R. Preview Committee, Successful Farming, Time, Variety* (weekly).

The figures preceding the title of the picture indicate the number of critics who have been judged to rate the film A (recommended), B (intermediate), and C (not recommended).

Audience suitability is indicated by "A" for adults, "Y" for young people (14-18), and "C" for children, at the end of each line.

Descriptive abbreviations are as follows:

adv—adventure
biog—biography
car—cartoon
com—comedy
cri—crime and capture of criminals
doc—documentary
dr—drama
fan—fantasy
hist—founded on historical incident
mel—melodrama
mus—musical
mys—mystery
nov—dramatization of a novel
rom—romance
soc—social-problem drama
t—in technicolor
trav—travelogue
war—dealing with the lives of people in wartime
wes—western

A	B	C		
—	9	5	**Above Suspicion**	*war-com A*
3	8	3	**Action in the North Atlantic**	*war-dr A*
—	2	1	**Adventure in Blackmail**	*com A*
—	1	6	**Adventure in Iraq**	*war-mel A*
—	4	6	**Adventures of a Rookie**	*war-com AYC*
—	—	—	**Adventures of Tartu (*See* Tartu)**	
—	3	8	**Alaska Highway**	*mel AY*
—	4	7	**All by Myself**	*mus-com A*
—	1	7	**Always a Bridesmaid**	*mus-com AYC*
—	8	4	**Appointment in Berlin**	*war-mel A*
—	3	1	**Around the World**	*war-mus-com AYC*
—	1	2	**Avenging Rider, The**	*wes AYC*
—	10	5	**Background to Danger**	*war-mel AYC*
—	3	3	**Bar 20**	*wes AYC*
4	8	4	**Bataan**	*war-dr A*
—	13	6	**Behind the Rising Sun**	*war-dr A*
—	13	5	**Best Foot Forward**	*mus-com-t A*
—	2	3	**Beyond the Last Frontier**	*wes AYC*
—	1	3	**Billy the Kid in the Kid Rides Again**	*wes AY*
—	4	1	**Billy the Kid in the Renegade**	*wes AYC*
—	3	2	**Billy the Kid in Western Cyclone**	*wes AYC*
—	6	—	**Black Hills Express**	*wes AYC*
—	2	4	**Black Market Rustlers**	*mus-wes AYC*
—	1	8	**Black Raven, The**	*cri-mys AYC*
—	5	1	**Blazing Guns**	*wes AYC*
3	8	5	**Bombardier**	*war-dr AYC*
—	4	9	**Bomber's Moon**	*war-mel AYC*
—	—	5	**Border Buckaroos**	*mus-wes AYC*
—	4	—	**Bordertown Gun Fighters**	*wes AYC*
—	2	5	**Boy from Stalingrad, The**	*war-dr A*
1	2	—	**Bullets and Saddles**	*wes AYC*
—	1	3	**Calling Wild Bill Elliott**	*wes AYC*
—	2	4	**Campus Rhythm**	*mus-com AYC*
—	—	3	**Canyon City**	*wes AYC*
—	3	1	**Carson City Cyclone**	*wes AYC*
—	5	2	**Chance of a Lifetime**	*cri-mel AYC*
1	1	1	**City That Stopped Hitler, The**	*war-doc A*
5	13	1	**Claudia**	*com A*
3	2	—	**Coastal Command**	*war-dr AYC*
1	6	1	**Colt Comrades**	*wes AYC*
2	9	5	**Coney Island**	*mus-com-t A*
2	11	3	**Constant Nymph, The**	*dr A*
3	10	1	**Corvette K-225**	*war-mel AYC*
—	2	4	**Cowboy Commandos**	*war-wes AYC*
—	8	—	**Crazy House**	*mus-com AYC*
—	6	4	**Crime Doctor, The**	*cri-dr AYC*
—	3	2	**Cross of Lorraine, The**	*war-mel A*
2	2	5	**Cry Havoc**	*war-dr A*
—	6	4	**Dancing Masters, The**	*com AYC*
—	3	3	**Danger, Women at Work**	*com A*
—	9	1	**Dangerous Blondes**	*cri-com A*
1	1	2	**Death Valley Manhunt**	*wes AYC*
—	2	4	**Deerslayer**	*adv AYC*
1	10	3	**Destroyer**	*war-mel AYC*
—	15	3	**Dixie**	*mus-com-t A*
—	2	2	**Doughboys in Ireland**	*mus-com AYC*
—	1	3	**Drums of Fu Manchu**	*mel AYC*
—	5	2	**Falcon and the Co-eds, The**	*cri-mys AY*
—	4	8	**Falcon in Danger, The**	*cri-mel AYC*
1	13	3	**Fallen Sparrow, The**	*war-mys A*
—	4	1	**False Colors**	*wes AYC*
—	1	3	**False Faces**	*cri-mys AYC*
—	1	7	**Find the Blackmailer**	*mys-mel A*
—	5	1	**Fire in the Straw**	*dr A*
1	5	6	**Fired Wife**	*com A*
—	9	7	**First Comes Courage**	*war-dr A*
1	12	2	**Five Graves to Cairo**	*war-mel A*
3	9	4	**Flesh and Fantasy**	*dr A*
—	—	6	**Follies Girl**	*mus-com A*
1	3	3	**Footlight Glamour**	*com A*
9	7	3	**For Whom the Bell Tolls**	*war-dr-t A*
—	9	2	**Frontier Badmen**	*wes AYC*
—	4	3	**Frontier Fury**	*wes AY*
—	4	2	**Fugitive from Sonora**	*wes AYC*
—	3	7	**Gals, Incorporated**	*mus-com A*
—	3	—	**Gang's All Here, The**	*mus-com-t A*
—	5	1	**Gangway for Tomorrow**	*war-dr-propaganda A*
—	2	3	**Gentle Gangster, A**	*cri-mel AYC*
—	5	4	**Get Going**	*mus-com AYC*
—	—	3	**Ghost Ship, The**	*mel A*
—	1	7	**Ghosts on the Loose**	*war-com AYC*
—	1	12	**Gildersleeve's Bad Day**	*cri-com AYC*
—	1	6	**Gildersleeve on Broadway**	*com A*
1	8	—	**Girl Crazy**	*mus-com AYC*
—	4	—	**Girl from Monterey, The**	*mus-com AY*
—	2	6	**Good Fellows, The**	*com AYC*
—	6	3	**Good Luck, Mr. Yates**	*war-dr AYC*
—	2	4	**Government Girl**	*war-com A*
—	4	4	**Great Mr. Handel, The**	*mus-biog-t AYC*
—	2	1	**Guadalajara**	*mus-com A*
7	6	1	**Guadalcanal Diary**	*war-dr AY*
—	3	2	**Hail to the Rangers**	*mus-wes AYC*
2	3	—	**Happy Land**	*war-dr AYC*
—	3	2	**Harvest Melody**	*mus-com AYC*
—	1	7	**Headin' for God's Country**	*war-mel AYC*
—	1	5	**Heat's On, The**	*mus-com A*
4	14	—	**Heaven Can Wait**	*dr-t A*
1	3	2	**Henry Aldrich Haunts a House**	*com AYC*
—	5	2	**Henry Aldrich Swings It**	*mus-com AYC*
—	7	1	**Here Comes Elmer**	*mus-com A*
—	3	4	**Here Comes Kelly**	*com AY*
3	10	4	**Hers to Hold**	*war-mus-dr AYC*
—	10	6	**Hi Diddle Diddle**	*war-mus-com A*
—	3	3	**Hi 'Ya Sailor**	*mus-com A*
1	5	1	**His Butler's Sister**	*mus-dr AYC*
1	13	2	**Hit the Ice**	*mus-com AYC*

A	B	C		
3	14	—	**Holy Matrimony**	*nov-com A*
—	4	5	**Honeymoon Lodge**	*mus-com A*
—	5	1	**Hoosier Holiday**	*war-mus-com AYC*
1	6	6	**Hostages**	*war-nov A*
1	13	3	**I Dood It**	*mus-com A*
—	7	1	**In Old Oklahoma**	*mus-dr A*
1	7	2	**Iron Major, The**	*biog AYC*
—	1	5	**Is Everybody Happy?**	*mus-war-dr AYC*
—	1	3	**Isle of Forgotten Sins**	*adv A*
—	3	3	**It Happened in Gibraltar**	*war-mel A*
—	5	4	**It's a Great Life**	*com AYC*
—	2	1	**Jack London**	*biog A*
1	5	1	**Jeannie**	*rom AYC*
—	5	5	**Jitterbugs**	*mus-cri-com A*
—	2	1	**Jive Junction**	*mus-dr AYC*
1	11	3	**Johnny Come Lately**	*dr AY*
—	9	1	**Kansan, The**	*wes AYC*
—	14	2	**Lady Takes a Chance, A**	*com A*
—	2	7	**Larceny With Music**	*mus-com A*
7	7	2	**Lassie Come Home**	*nov-t AYC*
—	5	1	**Law of the Northwest**	*mel AYC*
—	3	3	**Law Rides Again, The**	*wes AYC*
—	11	8	**Let's Face It**	*war-mus-com A*
—	2	5	**Life of Simon Bolivar**	*hist A*
—	3	2	**Lone Star Trail, The**	*wes AYC*
1	3	—	**Lost Angel**	*com AYC*
—	2	5	**Mad Ghoul, The**	*cri-mel A*
4	—	—	**Madame Curie**	*biog AYC*
—	8	5	**Man from Down Under, The**	*war-mel A*
1	5	1	**Man from Music Mountain**	*mus-wes AYC*
—	2	2	**Man from Rio Grande, The**	*wes AYC*
—	3	—	**Man from Thunder River**	*wes AYC*
—	5	3	**Melody Parade**	*mus-com AYC*
—	4	—	**Mexicali Rose (re-issued)**	*mus-wes AYC*
—	2	7	**Mexican Spitfire's Blessed Event**	*com A*
—	2	3	**Minesweeper**	*war-mel AYC*
—	8	7	**Mr. Big**	*mus-com A*
—	1	2	**Mr. Muggs Steps Out**	*cri-com AYC*
—	1	9	**Murder on the Waterfront**	*war-mel A*
—	8	3	**My Kingdom for a Cook**	*com A*
—	5	2	**Mystery Broadcast**	*mys A*
—	3	6	**Mystery of the 13th Guest, The**	*mys-mel A*
—	3	4	**Nearly Eighteen**	*mus-com A*
—	5	1	**Never a Dull Moment**	*mus-com AYC*
—	4	5	**Night Plane from Chungking**	*war-mel AY*
2	6	—	**No Time for Love**	*com A*
—	4	4	**Nobody's Darling**	*mus-dr AYC*
4	9	2	**North Star, The**	*war-dr-propaganda A*
—	6	7	**Northern Pursuit**	*war-mel AYC*
—	1	2	**O, My Darling Clementine**	*mus-com A*
—	10	5	**Old Acquaintance**	*dr A*
—	1	2	**Outlaws of Stampede Pass**	*wes AYC*
—	5	3	**Paris After Dark**	*war-mel A*
—	1	2	**Passion Island**	*mel A*
—	5	3	**Passport to Suez**	*war-mys AYC*
—	1	9	**Petticoat Larceny**	*cri-mel A*
3	10	4	**Phantom of the Opera**	*mus-dr-t A*
—	3	3	**Pistol Packin' Mama**	*mus-wes A*
—	2	4	**Prairie Chickens**	*com AYC*
2	4	2	**Prelude to War**	*doc A*
1	13	—	**Princess O'Rourke**	*rom AYC*
—	3	6	**Redhead from Manhattan**	*com A*
—	2	1	**Return of the Rangers**	*mus-wes AYC*
—	—	7	**Revenge of the Zombies**	*war-mel A*
—	5	—	**Ride, Tenderfoot, Ride (re-issued)**	*mus-wes AYC*
—	2	4	**Riders of the Rio Grande**	*wes AYC*
—	6	2	**Riding High**	*mus-com-t A*
—	4	2	**Robin Hood of the Range**	*mus-wes AYC*
—	2	1	**Rookies in Burma**	*war-com AYC*
1	1	3	**Russian Story, The**	*hist A*
—	5	—	**Saddles and Sagebrush**	*mus-wes AYC*
5	11	—	**Sahara**	*war-dr AYC*
—	1	5	**Saint Meets the Tiger, The**	*cri-mel AYC*
1	6	2	**Salute to the Marines**	*war-mel-t AYC*
—	3	3	**Sante Fe Scouts**	*wes AYC*
—	3	9	**Sarong Girl**	*mus-com A*
—	1	7	**Scream in the Dark, A**	*mys A*
—	—	12	**Seventh Victim, The**	*mys-mel A*
8	8	—	**Shadow of a Doubt**	*cri-dr A*
—	1	6	**She Has What It Takes**	*mus-com A*
1	6	4	**Sherlock Holmes Faces Death**	*cri-mel AYC*
—	1	2	**She's for Me**	*mus-com A*
2	2	2	**Shrine of Victory, The**	*war-doc AYC*
—	2	2	**Silver City Raiders**	*wes AYC*
—	4	3	**Silver Spurs**	*mus-wes AYC*
—	—	—	**Simon Bolivar (*See* Life of Simon Bolivar)**	
—	3	—	**Six-Gun Gospel**	*wes AYC*
—	11	7	**Sky's the Limit, The**	*war-mus-com AYC*
—	2	6	**Sleepy Lagoon**	*mus-dr AYC*
—	1	2	**Smart Guy**	*cri-dr A*
7	10	2	**So Proudly We Hail**	*war-dr AY*
—	1	8	**So This Is Washington**	*war-com AYC*
—	10	1	**Someone to Remember**	*com A*
—	5	3	**Son of Dracula**	*mel A*
1	5	1	**Song of Texas**	*mus-wes AYC*
—	2	1	**So's Your Uncle**	*com AYC*
—	7	2	**Spotlight Scandals**	*mus-com A*
—	2	5	**Spy Train**	*war-mel A*
5	10	3	**Stage Door Canteen**	*war-mus-com AY*
1	12	2	**Stormy Weather (all negro)**	*mus-dr A*
—	3	5	**Strange Death of Adolph Hitler, The**	*war-mel A*
—	3	1	**Stranger from Pecos, The**	*wes AYC*
—	6	5	**Submarine Alert**	*war-mel A*
—	3	4	**Submarine Base**	*war-mel A*
2	13	2	**Sweet Rosie O'Grady**	*mus-com-t A*
—	1	3	**Swing Fever**	*mus-com A*
—	11	4	**Tartu**	*war-mel A*
—	2	1	**Tarzan's Desert Mystery**	*war-adv AYC*
—	3	2	**Terror House**	*mys-mel A*
2	7	6	**Thank Your Lucky Stars**	*mus-com AYC*
—	1	6	**That Nazty Nuisance**	*war-com AYC*
—	3	—	**There's Something About a Soldier**	*war-com AYC*
—	—	—	**Thirteenth Guest (*See* Mystery of)**	
12	8	—	**This Is the Army**	*war-mus-t AYC*
5	11	—	**Thousands Cheer**	*war-mus-t AYC*
—	7	5	**Thumbs Up**	*war-mus-com AYC*
—	1	6	**Tiger Fangs**	*war-mel AYC*
1	10	3	**Top Man**	*war-mus-com AYC*
—	4	5	**Tornado**	*mel A*
—	11	4	**True to Life**	*mus-dr AYC*
—	5	9	**Two Senoritas from Chicago**	*mus-com A*
—	11	1	**Two Tickets to London**	*war-mus-dr AYC*
—	1	5	**Underdog, The**	*mel AYC*
1	5	1	**Unknown Guest, The**	*mel A*
3	8	2	**Victory Through Air Power**	*car-propaganda-t AYC*
—	3	2	**Wagon Tracks West**	*wes AYC*
6	11	—	**Watch on the Rhine**	*war-dr A*
—	1	2	**West of Texas**	*mus-wes AYC*
—	2	4	**West Side Kid, The**	*cri-mel A*
—	9	8	**We've Never Been Licked**	*war-mel AYC*
—	2	2	**What a Woman!**	*com A*
—	6	6	**What's Buzzin', Cousin?**	*mus-com AYC*
—	4	—	**Where Are Your Children?**	*mel A*
—	4	2	**Whistling in Brooklyn**	*cri-com AYC*
—	—	5	**Wild Horse Stampede**	*wes AYC*
—	6	7	**Wintertime**	*mus-com AYC*
—	3	—	**Woman of the Town, The**	*mus-wes A*
—	4	1	**Women in Bondage**	*war-dr A*
2	1	—	**World of Plenty**	*propaganda A*
—	4	6	**Yanks Ahoy**	*war-com AYC*
—	7	2	**Young Ideas**	*com A*
—	4	4	**You're a Lucky Fellow, Mr. Smith**	*mus-com A*

The Consumers' Observation Post

[Continued from page 4]

ADULTS may be able to get along for a short time on an inadequate diet, but children are likely to have their health crucially affected, perhaps for life. Dr. Agnes Fay Morgan, well-known west-coast nutrition researcher, recently pointed out that feeding experiments have shown that young animals deprived of protective foods for a few weeks developed permanent disabilities that could not be eliminated by feeding them on a lavish scale later on.

* * *

SIRLOIN STEAK, T-bone steak, butcher steak, and filet mignon were actually available in Toronto, Canada, restaurants according to a reporter from the United States attending a trade convention. The prices were moderate, too. Lunch with steak could be had for 55 cents. Canada has observed meatless Tuesdays, but an abundance of pork, lamb, beef, and mutton has been available during the rest of the week, with extra allowances for hard workers. If it weren't for the climate this time of the year, many tourists from the U.S. would no doubt be heading North.

* * *

THE RESTRICTION ON THE PRODUCTION of dry cell batteries for farm radio and telephone services touched so sensitive a public nerve that concurrent resolutions were passed by the House of Representatives and Senate of the State of Iowa, urging upon Congress the lifting of priorities and restrictions on batteries used for rural telephones, radios, and electric fences, and copies of the resolution were transmitted to the Senate and House of Representatives in Washington, to the War Production Board, and to the Iowa Members of the Senate and the House of Representatives in Congress. A similar resolution was passed by the legislature of the State of Nebraska. Although federal agencies have spoken of the great importance of keeping civilian radios alive and operating during the war time, this appears to be another of the many instances of the WPB and OPA delaying their relief of a serious consumer-goods shortage until much harm has been done.

* * *

SNOW REMOVAL is often rendered difficult by snow sticking to the shovel. This can be overcome by coating the shovel with melted paraffin wax, according to a North Dakota Agricultural College Bulletin. The easiest way to coat the shovel is to heat it by holding it over the fire in the furnace or over a gas

or other flame, just enough so that, when the wax is applied, it will melt and flow evenly over the surface. Rub the block of wax over the shovel until the entire surface is coated. Be careful not to overheat the shovel.

* * *

FROZEN FOOD CABINETS are so convenient for storing meat, vegetables, and fruit for home consumption that many consumers have already indicated their intention to buy these cabinets as soon as they are generally available again. The cost of operation according to a study made by John E. Nicholas, writing in the journal of the American Society of Agricultural Engineers, for 3, 6, and 15 cubic foot domestic type of frozen food cabinets was found to be 56, 65, and 123 kwhr. per month respectively. With electricity at 3 cents a kwhr. this would make the monthly charge $1.68, $1.95, and $3.69 respectively. In this particular study, all food frozen was usable during the 10-month study period. Housewives found the frozen food highly satisfactory; cauliflower indeed was considered superior to fresh cauliflower.

* * *

FRESH FISH has no fishy odor or taste, but really fresh fish is practically unobtainable commercially, according to scientific studies from Canada recently reported. Fish that is really fresh has no "fishy" odor either before or after cooking and will leave no after-taste when eaten. The objectionable odor and flavor is due to the setting free in sea fish of trimethylamine by incipient decomposition. Much more careful handling of fish than is now provided is required, from the time the fish is caught until it is served.

* * *

NEW PRODUCTS: Pot Scourers are now back in the five-and-dime stores. Made of metal wire and shavings, they customarily sell for 10 cents apiece. They are decidedly skimped in size as compared with the scouring pads of prewar days which were made from curled copper shavings. While the metal from which the new scourers are made will not rust as rapidly as steel or iron, it is still subject to corrosion. On the whole, however, these substitutes will be welcomed by the person who is detailed to do kitchen duty on the home front. Two brands that have been examined by CR and found satisfactory are Pullman and Ace.

Butter churning at home continues to be popular judging from the widespread appearance of an elementary type of churn retailing from $1 to $1.95 in chain variety stores, department, housefurnishing, and hardware stores in many parts of the country. The churn carries no brand name, but it consists of a gallon glass jar with a wooden cover fitted into the neck of the jar. The cover has a hole for the wooden dasher which is worked up and down with the hand. The fitting is somewhat crude and the hole in the cover may in some cases need a bit of sandpapering before the dasher rod slides smoothly. Cream aged for about a week in the refrigerator and then brought to room temperature before churning can be churned to butter in about twenty minutes. The cost?—about $2 the pound.

PHONOGRAPH RECORDS

By Walter F. Grueninger

Please Note: Prices quoted do not include taxes. In the ratings AA indicates highly recommended; A, recommended; B, intermediate; C, not recommended.

A PRIVATE collection of several thousand pre-electric-recording classic records in excellent condition was sold in November at a New York auction room in lots of about 50 single faced discs, assortment predetermined by the auctioneer but including Caruso, Farrar, Tetrazinni, Gadski, Amato, Kreisler, Elman and similar artists in most lots. The records brought approximately 30 cents each.

The more recently manufactured electrically-recorded symphonic and operatic double-faced records brought close to the current catalog price of a dollar for a twelve inch disc. Prices for both lots were the highest I have ever seen at auction and may well cause collectors to ask themselves whether this is the time to sell the records in the attic or the unwanted part of their collection at a price ten or more times the current scrap price. Interested buyers may include a local auctioneer, a record shop which deals in used records, or another collector.

Ratings of Phonograph Records

ORCHESTRA

Brahms: *Waltz in A Minor.* Andre Kostelanetz and his Orchestra & **Gershwin:** *Porgy and Bess—Summertime.* Pons (soprano). 2 sides, Columbia 71491. **$1.** If you want the lullaby *Summertime* with more Negro feeling and without Lily Pons "Leetle Baby," as I do, get Anne Brown's recording on Decca 29067. If you want Brahms' tender waltz, don't get this lush orchestral arrangement but listen to it played as the composer intended—Bachhaus' intimate piano recording on Victor 14132. Both sides of Mr. & Mrs. Kostelanetz' record could have been presented on a 10 inch disc at a saving of precious shellac and 25c of the consumer's money.
Interpretation C
Fidelity of Recording A

Delius: *Paris, Eventyr, Koanga* (closing scene), *Hassan-Interlude & Serenade.* London Philharmonic Orchestra under Beecham. *To the Queen of My Heart & Love's Philosophy.* Nash (tenor). 14 sides, Columbia Set 305. $7.50. Columbia re-issues this set, first released in 1937, as a Record Classic in a newly designed album. Delius, who died nearly a decade ago, never attained the popularity over here he enjoyed in England. Yet I find most of the music in this album distinguished, akin to Debussy and Sibelius. Unfortunately the Society Set album arrangement under which this set is issued prohibits the purchase of separate records, so one must take less interesting compositions to get the best. My first record "wows," some surfaces are gritty and others are quiet. The performance is excellent, the English recording done at a rather low volume level.
Interpretation AA
Fidelity of Recording A

Mendelssohn: *Symphony No. 4* ("Italian"). Philharmonic-Symphony Orchestra of New York under Beecham. 8 sides, Columbia Set 538. $4.50. Almost from the first chord it is apparent the recording of this symphony fails to supersede the older Koussevitzky-Boston Symphony, Victor Set 294. The interpretation nearly equals the demands of this difficult, exciting score but falls a trifle short of Koussevitzky's. According to the newspapers, this is one of the sets Beecham did not wish released because it did not satisfy him. He changed his mind later. Moreover, the Victor set runs only six sides against Columbia's eight, with a consequent price differential of one dollar. Surfaces are quiet excepting side 3, which swishes. Overall, Victor Set 294 is my preference.
Interpretation A
Fidelity of Recording B

LIGHT & POPULAR

Dexter: *Pistol Packin' Mama* & **Styne-Cahn:** *Vict'ry Polka.* Bing Crosby & Andrews Sisters (baritone and vocal trio). 2 sides, Decca 23277. 50c. Popular songs performed up to the hilt. Quiet surfaces.
Interpretation AA
Fidelity of Recording AA

Dexter: *Pistol Packin' Mama* & **Fisher-Austin:** *Wilberforce, Get Off That Horse!* Freddie "Schnickelfritz" Fisher and His Orchestra. 2 sides, Decca 4425. 35c. Broad comedy, principally by the instrumentalists, features this performance. The work of the drummer offers a challenge to the reproducing qualities of your phonograph, particularly in the higher frequencies. Quiet surfaces.
Interpretation AA
Fidelity of Recording AA

Heschna-Harbach: *Cuddle Up a Little Closer* & **Brown-Robin:** *Later Tonight.* Armen (soprano). 2 sides, Decca 18568. 50c. *Cuddle Up* fares better than *Later Tonight* but there's little distinction in either of Kay Armen's performances. Choral backgrounds. Quiet surfaces.
Interpretation B
Fidelity of Recording AA

Kapp-Tobias: *For the First Time* & **Von Tilzer-McCree:** *Put Your Arms Around Me, Honey.* Haymes (baritone). 2 sides, Decca 18565. 50c. *For the First Time* drips with crooner's sentiment but *Honey* swings along in lively fashion. Choral backgrounds. Quiet surfaces.
Interpretation A
Fidelity of Recording AA

Redman: *Cherry* & **James-Matthias:** *Jump Town.* Harry James (trumpet) and His Orchestra. 2 sides, Columbia 36683. 50c. There's nothing particularly outstanding in these strict tempo numbers, yet Harry James fans are likely to drive sales way up. Quiet surfaces.
Interpretation A
Fidelity of Recording B

Revil: *Moulin Rouge.* Rolland (tenor). 6 sides, Bost Set BA7. $3.75. These songs were popular, supposedly, in Paris in 1939 and 1940. As performed here they seem very dull. Quiet surfaces.
Interpretation C
Fidelity of Recording AA

Wilfahrt: *Happy Hugo Hambo & Favorite Polka.* "Whoopee" John Wilfahrt and His Band. 2 sides, Decca 4423. 35c. Pleasing dances played with spirit by a small orchestra. Audible surfaces.
Interpretation AA
Fidelity of Recording AA

Dinah Shore Musical Orchids. Shore (soprano). 8 sides, Victor Set P139. $2.50. The selections include *Memphis Blues, Somebody Loves Me, Mad About Him, Smoke Gets in Your Eyes, How Come You Do Me Like You Do, Blues in the Night, Honeysuckle Rose, My Man.* Radio editors voted Dinah Shore "the outstanding new star of 1943," reports the Victor Record Review. Nevertheless, her performance of *Smoke Gets in Your Eyes* and *My Man* miss the boat. She sounds best when not too close to the microphone, as in *Mad About Him.* The recordings have depth, though some are slightly better than others. Best disc: Victor 20-1543, offers *How Come* and *Blues in the Night.* Seven surfaces are quiet, *Mad About Him* is noisy.
Interpretation A
Fidelity of Recording AA

44.00